Routledge Studies in New Media and Cyberculture

QUEER REFLECTIONS ON AI

UNCERTAIN INTELLIGENCES

Edited by
Michael Klipphahn-Karge, Ann-Kathrin Koster,
and Sara Morais dos Santos Bruss

ROUTLEDGE

Queer Reflections on AI

This volume offers a socio-technical exploration of Artificial Intelligence (AI) and the way it reflects and reproduces certain normative representations of gender and sexuality, to ultimately guide more diverse and radical discussions of life with digital technologies.

Moving beyond the examination of empirical examples and technical solutions, the book approaches the relationship between queerness and AI from a theoretical perspective that posits queer theory as central to understanding AI differently. The chapters pose questions about the politics and ethics of machine embodiments and data imaginaries on the one hand, and about technical possibilities for a production of social identities characterised by shifting diversity and multiplicity on the other, as they are mediated by and through digital technologies.

Transgressing disciplinary boundaries to engage a diversity of conceptual tools, critical approaches, and theoretical traditions, this book will be an important resource for students and researchers of gender and sexuality, new media and digital cultures, cultural theory, art and visual culture, and AI.

Michael Klipphahn-Karge is an art historian at Technische Universität Dresden and Editor of the peer-reviewed online journal *w/k Between Science and Art*.

Ann-Kathrin Koster is a Research Associate at the Weizenbaum-Institute, Berlin.

Sara Morais dos Santos Bruss is a media theorist and curator at the Haus der Kulturen der Welt in Berlin.

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Queer Reflections on AI

Uncertain Intelligences

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Contributors

Blair Attard-Frost is a PhD candidate in the Faculty of Information Sciences at the University of Toronto. Attard-Frost's research is concerned with the governance of AI and explores the social construction of intelligence, as well as ethical and political issues of AI value chains. This research is informed by Attard-Frost's own experiences as a trans person working on a variety of projects, including digital transformation, public sector enterprise development, start-up, and higher education contexts.

Johannes Bruder heads the Critical Media Lab Basel and is a senior researcher at the Institute for Experimental Design and Media Cultures at the University of Art and Design in Münchenstein near Basel. As a sociologist, he is primarily concerned with critical states and the media-based definitions of crisis, overload, and excess. Brother's research interests are transdisciplinary research methods, knowledge practices, alternative pedagogies, and publication formats, that question their own disciplinary paradigms and make cultural studies research applicable in real-world contexts.

Orit Halpern is a Professor of Digital Cultures and Social Change at Dresden University of Technology. Her work combines the history of science, computer science, and cybernetics with that of design. She completed her doctorate at Harvard. She has held numerous visiting positions, including at the Max Planck Institute for the History of Science in Berlin, IKKM Weimar and Duke University. She is currently working on two projects. The first is a history of automation, intelligence, and freedom; the second project explores extreme infrastructures and the history of planetary-scale experimentation in design, science and technology.

Carsten Junker is a Professor of American Studies with a Focus on Diversity Studies at the Technische Universität Dresden. His research interests and teaching foci include North American literatures and cultures (incl. Canada and the Caribbean, 18th century to the present), epistemologies of difference and plurality in scenarios of inequality, genre and media theory, as well as visual and popular cultures in North America.

Ute Kalender temporarily represents the professorship of Media, Algorithms and Society in Media Studies at the University of Paderborn since October 2022. She researches and teaches there with a focus on digital care work, AI from an intersectional perspective and feminist digital manifestos. She is also employed as a research assistant in a participatory research project on health care for intersex people and children and adolescents with adrenogenital, Turner or Klinefelter syndrome at the Charité in Berlin. She also worked in the BMBF project Digital Academy Care 4.0.

Os Keyes is a PhD candidate in the Department of Human-Centred Design and Technology at the University of Washington. Keyes focuses on constructions of gender, disability, technology, and power. His research includes the coding of facial recognition systems, related notions of race and gender, biomedicine, and the authentication of trans existences, as well as autism. Keye's dissertation seeks to revive and retell the history of biomedical and political debates about trans identity and shows how politics relate to and resonate with the institutionalisation of trans medicine. The treatment of transgender persons as an object of research is examined using methods such as interviews and archival research.

Michael Klipphahn-Karge is an art scholar and studied fine arts and art history in Dresden, Berlin and Ústí nad Labem. He is currently working on his dissertation on the entanglement of AI and magic in contemporary art at the Technische Universität Dresden. He is also a fellow of the Schaufler Lab@TU Dresden and editor of the peer-reviewed online journal *w/k – Between Science & Art*. His research interests include modern and contemporary art, its mediation and the connection between art and science. His research focuses on the image cultures of technical and digital systems, artificial intelligence, constructions of gender, sex and queerness, as well as theories of animisms, magic, and ritual.

Katrin Köppert is an art and media scholar with a special focus on gender/queer studies and post/decolonial theories. Köppert is a junior professor of art history and popular cultures at the Academy of Visual Arts Leipzig; in the winter semester 2021/22 and summer semester 2022 Köppert represented the professorship for transformations of audiovisual media with a special focus on gender/queer theory at the Ruhr-Universität temporarily. Köppert's main areas of work are post-decolonial and queer media theories and queer art in the context of AI and photography. Together with Julia Bee, Köppert heads the DFG research network Gender, Media and Affect (2020–2023). Köppert also chairs the Academy for Transcultural Exchange at the HGB Leipzig and is an editorial board member of the peer-reviewed open-access journal *Open Gender*.

Ann-Kathrin Koster studied Political Science, Sociology and Intercultural Gender Studies in Trier and Washington D.C. Her research interests lie in

the field of democratic theory, where she currently focuses on epistemological approaches to democracy and technology. Her dissertation deals with the interrelationship between democracy and artificial intelligence. From 2020 to 2022, she was a fellow at the Schaufler Lab@TU Dresden. She is currently a research assistant at the Weizenbaum-Institut/Social Science Research Centre Berlin.

Sara Morais dos Santos Bruss is a cultural and media theorist, author, and curator at the Haus der Kulturen der Welt in Berlin. In her work, she is interested in technology myths from a feminist and decolonial perspective. In 2020, Sara completed their doctorate in the DFG Research Training Group Minor Cosmopolitanisms at the University of Potsdam, after which she became a head researcher of "Digital-Gender" a project with the GenderConceptGroup at the Technische Universität Dresden. In her dissertation, *Feminist Solidarities after Modulation* (punctum press, 2023), Morais dos Santos Bruss writes a cultural history of technological identifications and identities and examines (feminist) collectivity against the backdrop of algorithmic logics of evidence and identity. Sara is also a member of diffrakt. centre for theoretical periphery and editor at kritisch-lesen.de.

Nishant Shah is professor (Assoc.) of Global Media and the Director of the Digital Narratives Studio at the School of Communication and Journalism, The Chinese University of Hong Kong. He is a Faculty Associate at the Berkman Klein Centre for Internet & Society, Harvard University and a Knowledge Partner of The Digital Asia Hub. His work operates at the intersections of narratives, body, identities, digital technologies, artistic practice, and activism. His current interest is in thinking about issues of digital narrative practices for building inclusive, diverse, resilient, and just societies.

Preface

This volume is an exploration of the field of queer artificial intelligence (AI). Our aim was to look at the entanglement of queerness, digital technologies, and AI from the perspectives of the humanities, social sciences, and cultural studies.

This volume is the result of a collaboration between the **Schaufler Lab@TU Dresden** and the **GenderConceptGroup** at **Technische Universität Dresden** (TU Dresden, Germany):

In the Schaufler Lab@TU Dresden, which was initiated jointly by **The Schaufler Foundation** and TU Dresden, scientists and artists deal with interactions between technology and art as well as between science and entrepreneurship. Editors Michael Klipphahn-Karge and Ann-Kathrin Koster worked as fellows of the Lab during the creation of this volume.

The GenderConceptGroup brings together professors from the humanities and social sciences at TU Dresden who focus on gender research or gender studies in their respective disciplines. Editor Sara Morais dos Santos Bruss was working as a researcher in the associated **Digital Gender** project, in which she investigated the mutuality of sex, gender, and digitalisation during the time this volume was being written.

We would like to take this opportunity to thank all the members and staff of these institutions, especially Professor Maria Häusl and Professor Lutz M. Hagen for their support, as well as the sponsors who made this volume possible: The Schaufler Foundation, the GenderConceptGroup, the **Saxon State and University Library Dresden** (Sächsische Landesbibliothek – Staats- und Universitätsbibliothek Dresden/SLUB) and the TU Dresden. We would also like to thank our authors, and Sebastian Berg, Ben Burmeister, Richard Groß, Nico Karge, and Thorsten Thiel for their numerous formal and substantive contributions to this volume, as well as the constructive discussions to which they have contributed.

It should not go unmentioned that our names as editors of this volume have been listed in alphabetical order; this order therefore makes no statement about ideas or the distribution of work within this volume.

In addition, some of the contributions collected here were originally written in German and translated into English by the authors for this volume. Therefore, as editors, we have allowed for variance in the translations of quotations into English. We have also asked our authors to adapt their original writing to include debates on their subjects within anglophone academic debates, taking care to not only centre on euro- and west centric debates.

Michael Klipphahn-Karge, Ann-Kathrin Koster,
and Sara Morais dos Santos Bruss

Introduction

Queer AI

Michael Klipphahn-Karge, Ann-Kathrin Koster, and Sara Morais dos Santos Bruss

> If war is technological, perpetual, and networked, queer networks can provide interstices – places of difference that unite queer activists, intellectuals, and artists in technological agency. The gay bomb detonates a regulatory standard for homosexuality. Gay Bombs is a strategy that blows up this standard with the hopes of re-wiring a non-standard of queerness. Gay Bombs explode into interstices of infinite mutation.
>
> (Blas 2008a)

Queer technologies

In the *Queer Technologies* work series, the artist Zach Blas negotiates the relationship between sex, gender, and technology, which he sees to be relational and entangled. Since its first initiation in 2008, the artist has worked with various multimedia forms that represent different aspects of queer and queering technologies. Using a variety of screens arranged in a way reminiscent of commercial merchandise displays, Blas critically echoes consumer culture and its systemic ties to an oppressive economy, while at the same time enabling a pluriverse brought to the fore by each technological object, interface, or screen and the various time-space continuums they represent. Each individual presentation surface displays objects and monitors, some of which are labelled, while others are not. These diverse formats are unified through a conceptual framework, which embeds the technologies in a series of practices, artefacts, and informations that represent a vision of technology created in service of, or through the queer body (Figure 0.1).

Blas continuously makes visible and criticises naturalising constructions of sex and gender that manifest and reproduce themselves in technical artefacts and technological architectures. For example, the *ENgendering Gender Changers*, a series of devices packaged and aesthetically approximated to everyday travel adapters or electronic transmission converters. With this recontextualisation of a conventional consumer object, Blas consciously questions the connection between gender, identity, and the hard- and software connectivity of information technology. Through the possibility of converting oneself with such an adapter, the artist proposes a palette of

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Figure 0.1 Zach Blas. *Queer Technologies*, 2008–2012, New Wight Gallery, University of California, Los Angeles (2008).

campy solutions to the problem of binary gender constructions—the adapters allow for a fluid and continuous game of switcheroo between various real and imagined gender identities. With this collection, Blas points to the explosive potential of a pluralised practice of re-imagination that produces iterative ambiguities, not only queering existing technologies but also developing technologies that are imagined to actively participate in the queering of their surroundings. Contrary to conventional adapters that function according to a hole and pin principle, these *ENgendering Gender Changers* have multiple options, including MALE FEMALE to HIR, MALE to BUTCH, or MALE to FEMME transitions, which are materialised via double-sided plug holes, circular, or multidirectional pins and other formats that come to stand in for non-penetrative and queer exchange beyond the binary principle. In his curatorial practice, Blas further provides visitors with political tools that can be used to break through the very tendencies of naturalisation under critique, so as to not only negate or refuse, but reopen them to new interpretations (Figure 0.2).

This form of queer(y)ing technologies is best illustrated by the *Gay Bomb*. The *Gay Bomb* installation consists mainly of a video showing image-synthetic recreations of Blas' notions of a "Gay Bomb" in the form of a pink grenade. On the grenade detonator, visitors can identify the abbreviation QT for Queer Technologies, which is scattered across objects in the work series. The installation is accompanied by a technical manual manifesto that

Figure 0.2 Zach Blas. *ENgendering Gender Changers*, part of Queer Technologies, 2008–2012, New Wight Gallery, University of California, Los Angeles (2008).

explores the Gay Bomb as a pluralistic object of homosexuality that harbours heteronormative and queer potential at the same time. The myth of the "Gay Bomb" refers to a line of U.S. military research, which began in 1994 and was discontinued in 2005. The project aimed at developing an aphrodisiac chemical weapon that would literally make its targets "gay." Underlying the research was the notion that such a weapon would force enemies into submission by distracting them from combat operations, but also, and perhaps more centrally, by causing adversaries to surrender in shame at the sudden emergence of same-sex desire. Blas describes how this idea of an immaterial chemical weapon turns into a de facto bomb through media discourse that carry the research into the cultural imaginary. Once imagined in the form of an actual explosive device, the imaginary later becomes concrete technology: Instead of a biochemical "gay bomb," Afghanistan is hit by an actual bomb in 2003, on which a marine had written "High jack this Fags" in large white letters before sending it off (Blas 2008b: 29). What initially began as a rumour of experiments in the laboratory intertwines Orientalism, anti-Muslim racism, and homophobia in its final,

Figure 0.3 Zach Blas. *Gay Bombs: User's Manual*, part of *Queer Technologies*, 2008–2012, SPECULATIVE, Los Angeles Contemporary Exhibitions (2011).

concrete-material form as an artefact of the military-industrial-complex: technology appears here as a normative gendering force that lies in reverse to any kind of queer endeavour, producing the gay bomb in a necropolitical and heteropatriarchal object[1] (Figure 0.3).

The gay bomb is at once knowledge artefact, projection and explosive technology. It harbours psychosocial and post-cold-war ontologies, as well as western liberal politics driven by and grounded in economic and political ideologies. As with any cultural artefact, interpretations of the gay bomb have been pre- and remediated, the imagined configurations are affectively prepared and worked over within the media mainstream: from Stanley Kubrick's film Dr Strangelove (1964), to the music video for *Ask* (1987), a song by the band *the Smiths*, as well as an episode of the television series *30 Rock* (2/15, May 8, 2008). In the latter, the "Gay Bomb" mistakenly explodes in the Pentagon. What follows is an exaggerated scene in which the notorious "old white men" of the U.S. executive suite approach each other in eroticised, sweating ecstasy. Through this media reinterpretation, the meaning of the "Gay Bomb" changes again, since its use in the scene of the TV series is directed inward, that is, against the bomb throwers. Thus, the original intention of use is reversed: homosexuality, once chosen as a weapon that humiliates the Muslim enemy, is now projected—no less contemptuously, perhaps—onto a representation

that excavates and derides concepts of masculinity within the military. The very fact that evaluations of this representation may differ, illustrates how multiplications and transformations of the "gay bomb" can be understood, with Zach Blas, as a "terrorist" (Blas 2008b: 25) appropriation of heteronormative attributions. Inherent to this appropriation is the possibility of disrupting heteronormativity from within. In this way, the idea of the concrete materialisation and medialisation of the "gay bomb" is routed via camp, drag, and queer subculture. Its concrete use is flanked by a socio-political process of negotiation that seeks to blur the previously exhibited unambiguity of the artefact.

Queerness, as the example shows, emerges here with, over, and through technology, which may also turn against its creators. It is thus no coincidence that Blas also begins his "User Manual" for the Gay Bomb with the mandate that was projected onto the Afghanistan bomb: "Hi-Jack This Queers!" (ibid.: 29). In this instance, however, it is an invitation and address to queer activist networks: to destroy the norm inherent to and reproduced by technology, to hi-jack it through queer political actions and formations based on the development, deployment, and dissemination of queer technology as "terrorist" (ibid.). Through these appropriation strategies of a queer multitude, it becomes apparent that technology itself is open and in parts indeterminate, and thus can represent its own space of possibility within concrete applications and appropriations that are released through resistant practices—for example, through a redirection of discursive logics towards a vital, mutating political body of queer empowerment. The artist interweaves discursive and material levels of queering automated warfare by describing queerness as a tactic of disrupting consumption and heteronormativity (Blas 2008b: 14). Inherent to this strategy is an understanding of the term queer that is also central to the present anthology: fundamentally, we understand queer as a critical practice that is directed against naturalising and unifying concepts of social, cultural, and political perspectives, as well as a modality of highlighting the potential for repression that lie within to such monolithic iterations (Case 1991: 3). Queering refers to strategies, options, and spaces of possibility with the help of which existing understandings and attributions of gender, sex, but also binary and thus mutually exclusive categorisations such as male/female as structuring concepts of and to technology can be criticised, analysed, and blasted open.

In this sense, technology can first and foremost be defined as indeterminate. Such an understanding illustrates the possibility that technology can be realised in very different ways in different contexts of application and also be distributed, appropriated, and made socio-politically productive in various ways. AI is thus merely the latest of a whole line of transformative media technologies that "matter the most, when they don't seem to matter at all" (Chun 2016). The example given here illustrates the limits of an understanding of technology as only determining—one that sees the technical merely as an instrument without contradiction, since even a

technical artefact that is highly functionally determined and intended to kill appears to be appropriable for queer imaginaries. As the "Gay Bomb" illustrates, technologies are embedded in the socio-cultural imaginary, which in turn provides multiple possibilities for reinterpretation and appropriation. Technology never materialises as "pure tech"; rather, it is embedded in concrete social and cultural norms on the one hand, and on the other hand, is highly context- and application-bound. Blas' work shows that sex, gender, and sexuality are strong structuring elements of technology; they claim their own space as points of friction and thereby have an effect on technology itself, as well as on the localities of its dissemination. Queerness, then, becomes an "Operating System" (Keeling 2014) through which to view technology, and potentially alter its fungibilities. In such readings, Blas' work, which is captivating in its reference to concrete materialised artefacts, can be applied equally to digital technologies and current imaginaries around AI—artificial intelligence. In the context of these increasingly ubiquitous digital technologies, questions arise about changing conditions and genealogies of power and influence. At the same time, a plurality of narratives on these seemingly new and emergent technologies may bring new and altered possibilities of appropriating technology, emancipating from, with, and through technologies, and resisting the normative thrust inherent to contemporary structures underlying the development of emerging technologies through an insistence on queer ambiguities.

Artificial intelligence

Reaching beyond the examples worked through by Blas, AI no longer plays a role only in the military context; rather, there is an explosive spread of AI within everyday life. This omnipresence contributes to the fact that AI has become a term of enigmatic openness that is increasingly finding its way into various disciplines and discourses. Such ubiquitous diffusion is usually accompanied by a dilution of the term: AI currently seems to describe everything that is automated or autonomous in some way and can thus act purely as a machine. Thus, individual technical artefacts, especially algorithms, but also networked technologies or voice assistants such as Alexa, Siri, or wearables are subsumed under the term, as well as generalised references to machinic forms of being such as robotics, or specific methods of machine learning that are framed as "intelligent." So-called deep learning mechanisms involving neural networks are particularly prominent (LeCun et al. 2015; for an anthropological view see Seaver 2017)—these are becoming relevant especially in the context of increasing automation in a wide range of social domains from business to politics and healthcare (cf. Eubanks 2018).

As this short list already implies, AI has been positioned as the paradigmatic emerging technology, and has become a kind of universal representation of the same that provides suitable solutions for technical and

non-technical social or political problems. It is thus the latest buzzword upon which hinges a whole range of only partially technological regimes, previously accumulated under terms such as "Big Data" or the "Internet of Things." Examples can be found in a variety of contexts, such as the equation of automation and market liberalisation in the world of work gathered under the term industry 4.0, motion sensors that analyse and categorise facial movements to project emotional analyses via affective computing, or simply the monitoring of public spaces with the aim of deploying surveillance strategies in the name of order or security (Zuboff 2019; Amoore 2020). The efficient and rapid processing of a comprehensive amount of different data promises objectivity, effectiveness, and accuracy, and thus holds out the promise of standing apart from human error and bias, even proposing, as WIRED's former editor-in-chief once put it, an "end of theory" that "makes the scientific method obsolete" (Anderson 2008). Data is equated with an imaginary of complete knowability, which is set as universal through procedures of calculation that can produce a social "truth," because it can process more (and, in this imaginary, at some point *all*) data. Such an understanding of truth-making practices goes against a long history of feminist epistemologies of science and technology, which have argued against the objectivity of technology and its phantasm of complete knowability as a heteropatriarchal (and colonial) phantasy (e.g. Haraway 1988; Wajcman 1991; Browne 2015). This phantasy has been excavated as problematic, not just on gendered terms, in relation to AI in a variety of ways (cf. Gitelmann, 2013; Steyerl 2016; Noble 2018; Amaro 2022).

It is worth taking a closer look at the different uses and contextualisations of AI, to enable an approach to the phenomenon from different disciplines and methodologies—in terms of the history of ideas, conceptual critique, narratology, descriptive analysis, or deconstruction—and thus to set different focal points that diversify, contextualise, and make legible the sociopolitical relevance of AI. For, its usage has already been critically reviewed and evaluated for some time within the fields of Software and Critical Data Studies (cf. Chun 2005; boyd and Crawford 2012). Increasingly, research is addressing contemporary digital phenomena empirically, theoretically, and with regards to their social or cultural effects. Thus, an interdisciplinary field of research is forming that takes a look at political, social, and economic problem areas and attempts to theoretically capture the threat to social equality and freedom posed by technology (cf. most recently, for example, Amoore 2020; Crawford 2021; Coeckelberg 2022). The aim of such approaches and debates is to reflect in detail on datafied technologies' normative and normalising impact. At the same time, they open up the possibility of detaching algorithmic systems, information models and data-based spaces of action from a purely instrumental-technical understanding and anchor them more firmly within societal imaginaries and cultural production.

Bias

More recently, discrimination has become a central point of focus to describe the socio-political impact of AI in a way that has entered societal discourse through the concept of algorithmic bias. Within algorithmic systems understood as AI, it refers to unjustified unequal treatment as well as unjustified equal treatment in the context of algorithmic information processing. The examples are numerous, and some have received much attention of late: Amazon's recruitment algorithm that identified tech-savvy men as significantly more suitable for high-paying positions than equally tech-savvy women, a Facebook image recognition programme that sorted images of Black people into the category of "primates," or Facebook's classification of indigenous names as "fake." On different levels, these examples illustrate inherent biases within technological systems believed to have been deployed objectively. This is due to a central feature that makes AI work: for an AI to function, it must make concrete classifications based on concrete data. AI thus devalues certain data features while upgrading others (cf. Amoore 2020, 8). In order for an AI to produce results, it must therefore "discriminate" in the true sense of the word. Such a complex issue is usually reduced to a technical term or a technical flaw, the bias. However, biases are merely the result of a problematic policy that equates representation with categorisation, and it can occur at different levels. The recruiting algorithm had decided men to be more hireable, because men were already dominant in the specific jobs it was recruiting for, the AI projected data of the past into what it considered a desirable future. The equation of Black people with primates may have been the result of lacking data—as many facial recognition technologies are still not trained on Black and brown faces, and thus fail to recognise these as human more often than the white faces that make up the data sets (cf. Buolamwini and Gebru 2018). But it may also be the result of a form of malicious repetition, in which the repeated identification of Black people *as* primates calls upon the historical and racist degradation that these groups continue to be exposed to.[2] In most cases, a faulty, non-diverse data set is marked as responsible (cf. in more detail on the levels and aspects of algorithmic discrimination: Schwarting and Ulbricht 2022). However, the representational gaps might not be only due to a lack of data, but also due to a prior categorisation that evokes, works through, or problematically recodifies racist and sexist, or hetero-patriarchal stereotypes (Browne 2015; Noble 2018; Benjamin 2019; Angwin et al. 2016).

A purely technical understanding of discrimination then obscures the fact that evaluations and attributions—including conceptual ones—necessitate precise definitions of categories and thus rely on distinct precision rather than contextual interpretation. However, these interpretations play a role in decoding the patterns the AI produces when data becomes knowledge. Instead of presenting a bird's eye view that proposes complete knowability, AI works

with reductive systems that continuously negates or subsumes multiplicity and ambivalence, codifying it into this or that identifiable norm. The use of AI is therefore always oriented towards a normative structuring of data sets, which in turn is often historically based on the exclusion of marginalised positions. In a striking example, the author, filmmaker and artist Hito Steyerl shows how racisms, stereotypes, and structural inequalities can bias data sets even if the AI presents factually true forms of knowledge that could be considered as new information: When leading technology consulting firm Booz Allen, which evaluates and distributes security infrastructure for the US government amongst other clients, examined the demographic information of a luxury hotel chain, it turned out that many young people from Middle Eastern and North African countries were staying there and were booked into the consistently high-priced locations, which were spread all over the world. As Steyerl writes, the company did not trust its data analysis and dismissed the information as an error in the algorithm:

> The demographic finding was dismissed as dirty data—a messed up and worthless set of information—before someone found out that, actually, it was true. Brown teenagers, in this worldview, are likely to exist. Dead brown teenagers? Why not? But rich brown teenagers? This is so improbable that they must be dirty data and cleansed from your system!
>
> (Steyerl 2016, n.p.)

Such distortions of the result of a supposedly representative survey reveal an *inappropriate* distinction, even if the calculation procedure is factually correct: a specific characteristic is understood as an irrelevant miscalculation due to an incorrect reading and evaluation of meaning. Such miscalculations may concern empirical knowledge: Black people are not primates and that equation has a genealogy grounded in white supremacy and racial capitalism. However, it can also lead to seemingly sensible conclusions that reveal problematic situations: When women were previously underrepresented in a certain labour market, this should not lead to an equation that they are not suited for employment in these markets in future. This example shows that such a phenomenon cannot be countered with a mere "more" of data, to make the technical basis for calculation more accurate. Steyerl's observation shows that although data are available, they are (or can be) deleted, classified as false or ignored, and thus a reactionary moment is inherent to the codification of cultural evidence and its transformation into knowledge. What initially reveals itself as a technical procedure—the devaluation and revaluation of data characteristics—is historically bound and socio-politically determined.

Power

Jutta Weber (2005) identifies a "gendering" of technology and machines, an observation that goes beyond technical discrimination or bias. While the

concept of discrimination as bias is concerned with the parallels between evaluations and socio-political structures, the concept of power—parallel to the concept of intelligence—emphasises the productive potential of normative stereotypes inscribed into concepts of race, sex, and gender, but also into cultural formations that refer to geography economic status, and religion. Technology is never separate from these formations, rather, the mechanical apparatus is entangled with them in epistemological and socio-political ways. After an acknowledgement of "race as technology" (cf. Chun 2009), we must thus come to terms with gender functioning in parallel and being developed through new technological modalities of knowledge production (cf. Sharma and Singh 2022). With Blas' examples discussed initially, this means understanding how reductive concepts of gender and sexuality inform technology—as pin and hole infrastructures, for example—and how these technologies come to inform social contexts of "truth." This means not only looking at contemporary iterations of AI, but also tracing how it is a contemporary iteration of research, both military and economically driven, that begins amidst the anxieties of the Cold War and the desire to emerge as the superior economic system. The structures and modes of knowledge production and truth-finding in data-driven societies may now be established via algorithmic procedures. But these merely embed and codify earlier ideological frameworks within specific, sometimes de-contextualised automated systems. Especially for the humanities, this means that debates and analyses are turning towards the question, what knowledge is produced by algorithmic systems in what ways, and how this knowledge translates into socio-political structures and realities. Viewed through the lens of power, it has become apparent that AI is but the latest in a series of protocols that reproduce western heteropatriarchal normativity and whiteness as prototype via infrastructures referred to as "data colonialism" (cf. Browne 2015; Kwet 2019; Cave and Dihal 2020). The seeming autonomy of algorithmic systems thus works through an invisibilisation of the very structures of power and exploitation that AI is dependent upon, without which it would neither function nor seem intelligent (cf. Atanasoski and Vora 2019; Ganesh 2020). The gendering of technology can thus be excavated on the normative level of representation, but also in the acknowledgement that the infrastructural, invisibilised labour that produces these technologies has itself been feminised, so as to appear "natural" (cf. Haraway 1991; Nakamura 2014).

Knowledge, and with it, the material set-up of the world, is rationalised through seemingly objective, numerical procedures, as a result of which an understanding of knowledge prevails that is oriented towards the parameters of calculation, abstraction, and generalisation. AI thus becomes tangible above all in terms of its definitional power. Infrastructures of AI participate in the framing of reality and thus define the meaning of what is considered "normal" and "desirable" (cf. Amoore 2020, 6f.). Following Blas, these practices serve a successive framing of social reality, which is significantly oriented towards the heteronormative as infrastructural, unchangeable, as

universal. AI systems are used against this backdrop to advance socio-political development only within prevailing norms, in terms of normalising broad areas of life for individuals and collectives. AI thus posits societal norms within a double bind: on the one hand, AI fundamentally rearticulates prevalent modalities of discrimination and exclusions within societies by overemphasising existent social hierarchies. On the other hand, AI produces normativity when used to generate knowledge within a diverse range of social contexts, thereby reducing ambiguities, deviations, and multiplicities to the one or the other data set befitting the more general queries it is confronted with.

Processing almost infinite amounts of data by AI systems thus creates technology-bound, yet culturally situated knowledge, which it has the tendency to generalise according to west-centric readings and economic profitability, rather than neutral or pluralistic classifications and objective determinations of need. Instead, the focus shifts to the question of how existing relations and individuals are integrated into a deterministic regime of hegemonic views by means of AI systems (cf. Benjamin 2019). This particularly concerns a central feature of modern democratic societies. Modern democracies are characterised by a pronounced awareness of contiguity, according to which fundamental social norms, as well as specific laws can be criticised within the framework of institutional procedures as well as through political protest. In contrast, AI is rather a moment of normalisation qua technology. Thus, the concept of power no longer only focuses on the epistemic foundations of societies in the age of intelligent technology, but also places technological dominance at the centre of attention as a majority intertwined with concrete designs for order. Algorithmic decision-making thus quite literally positions AI in a capacity to not only evaluate data but actually autonomously decide things with societal dimensions. Not only are capacities for decision-making delegated away from societal terms of accountability, say, for discrimination on the job market, the process of decision-making is black-boxed and thus the complex data sets and contexts that led to these decisions become naturalised and seemingly unchangeable.

Queering

This emphasis on the reciprocity of power and AI and its entanglements with fundamental and hierarchical structures that permeate society are underlying the reflections in this volume, but its central impetus lies within the potential that the queer(y)ing of technologies such as AI might bring. For the conceptual openness and fluidity that AI allows for, also produces excesses, slippage, and resignifications that are the result of and equally reveal AI's constructedness and its levelling of cultural multiplicities as paradoxes that question the status quo. The volume thus considers the development and application of a queer understanding of knowledge; one that acknowledges every technological knowledge production as limited, contingent, and

particular, but at the same time repeatedly reveals "starting point[s] for shifting boundaries and destabilisations" (cf. Weber and Bath 2003) due to inherent multiplicities of reading. Against the heteropatriarchal, seemingly rational (and thus modern/colonial and economically oriented) understanding of complete knowability—epitomised in Donna Haraway's catchphrase "the view from above, from nowhere" (1988: 589)—we consider knowledge a result of concrete practices legitimised by material and discursive structures that streamline multiplicities into norms, and data into seeming objectivity (cf. Foucault 2001; Amoore 2020). However, these norms can be challenged, rejected, or resignified. Knowledge is thus always particular, incomplete, multi-dimensional, situation-bound, and plural.

While AI thus represents a most recent form of epistemic streamlining, the volume hopes to excavate epistemic surpluses and ambiguities that point to glitches in the essential structure of knowledge, which in turn are made productive by a queer-theoretical approach to digital technologies. Although they are based in a whole range of methodological and epistemic traditions, the chapters in the volume are pulled together via their groundings in queer theory, which itself is marked by multiplicities and ambiguities and a non-identitarian impetus that refuses categorisation. What can be found as binding this diverse field together is a notion of refusal that articulates itself against binaries of all kinds, playfully appropriates hegemonic aesthetics and forms, and shows crossings and appropriations inherent to past, normative, and future genealogies (cf. Butler 2004; Muñoz, 2009; Halberstam 2020). While the "shock-value" of these queer aesthetics had been imagined as pacified during the late beginnings of the 21st century to a certain extent (McRobbie 2009; Berlant 2011), the anti-identitarian impetus of queer studies as an intellectual and political tool of critique arises once more to be of central importance in times of algorithmic accuracy and certainty. At the same time, much like contemporary debates on computer vision and racism (cf. Amaro 2022), queer theory itself needs to be bolstered against appropriation in a time where technologies themselves are turning to affects, desires, and multiplicities that rein in or attempt to codify queer life. As a framework of analysis, a decidedly queer approach can question the very logics of visibility with which algorithmic systems and AI are trained. It can serve, for example, to excavate practices of disidentification (Muñoz 1999), satirising the reductive outlining of queer subjects by AI, as Blas perhaps has chosen to do. And, in the sense of refusal, perhaps as queer theorists such as Lee Edelman would represent (2004), queer theory can question whether the question of inclusion of any kind could ever be a satisfactory option for queer life, when this inclusion means merely adaptation and co-optation into a heteronormatively constructed system. In both cases, a queer disposition is expressed that defies normative relations, in one way or another, and articulates a politics that epitomes in "the consent not to be a single being" (Moten 2018). Articulated as multiplicity, such refusal holds the potential to give space to marginalised positions far beyond the spectrums of sex, gender,

and sexuality, to question not only representational identities but the structures that produce them as deviant as much as the technological forms of capital that seek to pacify that deviance.

Such a "queer" understanding of knowledge and knowability crosses hegemonic understandings of AI as a specific technical apparatus. For, in most cases, AI continues to be considered merely in terms of its interconnected technical units based on formalised calculations. This technocratic understanding of rigid and purely mathematical-numerical systems leads to a return of the black box that has framed AI as inaccessible and difficult to understand, so that possible changes are perceived as difficult or difficult to realise. But "explainable AI"—the proposition to contrast the black box with transparent and understandable pathways—arguably norms the rational framework of a certain type of explainability all the more. With queer theory, we seek to reopen the black box as a potentiality and resituate AI within the various, ambivalent and sometimes contradictory cultural narratives that have brought it to the fore—technological development and plausible fictional scenarios that envision its necessity are two sides to the coin of material technicity, and they shape and are shaped by socio-cultural location (Dainton et al. 2021). An "algorithmic anthropology" (Seaver 2017) is thus concerned with not only technical, but also cultural, aesthetic, and semantic practices and effects of algorithmic systems, understands them as multiple and polysemic, and thus alterable. Sociotechnical imaginaries (Jasanoff and Kim 2015) of AI are thus central important social frameworks, which can be excavated from cultural artefacts, films, and artworks, as well as societal and scientific processes. Further, technological metaphors that are transported into social context can also produce meaningful queer analyses of sociotechnical imaginaries, that pluralise how we conceive of societies and collectivities.

Conception

Given the various disciplines represented in the anthology—art history, cultural and literary studies, curatorial, digital and disability studies, English studies, feminist science and technology studies, information, media and software studies, medical ethics, and sociology—all of which have a strong interdisciplinary framing informed by questions on gender and sexuality, the aim is to draw on different aspects of AI and stimulate broad reflection on the subject. The volume is thus broadly divided into three sections, which complement and can be read against each other.

Part I Genealogies

In the first part, the genealogies of AI are contextualised and denaturalised by situating them in specific scientific, cultural, and economic contexts that influence their emergence. The focus is on the question of how the underlying

problematic of normative AI can be historicised, which historical traditions of exclusion and devaluation of current digital technologies link to it, and where the possibilities and limits of theoretical and empirical reflection of that matter lie.

Blair Attard-Frost thus frames the concept of intelligence as something itself embedded within a number of performative practices that reveal cognitive biases. For this purpose, intelligence is positioned as an ambiguous concept of judgement based on different norms and values. Attard-Frost counters this with a theorisation of intelligence that takes into account the conceptually conceived variability and diversity, which conceives of intelligence as a value-dependent cognitive achievement in the sense of a performance. Building on this, Attard-Frost designs a critical analytical framework within the study from the field of information science to queer two influential theories of intelligence: John Carroll's three-layer theory and Alan Turing's references to an ontology of AI.

Orit Halpern proposes a second avenue through which to understand AI, which is grounded within the neural net, neo-liberal economic thought, and finance. In this chapter, Halpern argues that these genealogies help understand how reactionary politics, population, and sex are being reformulated in our present with and through technologies. While the relationship between the Right, post-truth, suggestion algorithms, and social media has long been documented, rarely has there been extensive investigation of how ideas of choice and freedom become recast in a manner amenable to machine automation and to the particular brands of post-1970s alt-right discourses. This situation provokes serious challenges to political action, but also to our theorisation of histories of race and sex capitalism.

In **Nishant Shah**'s contribution, these genealogies are yet again reformulated within the dualities of cleanliness and dirt. Contemporary AI applications and platforms are placed within a genealogy that illustrates a continued pathology of queer bodies as dirty and contaminated, so as to produce AI as clean, pristine, and superior. Expanding on genealogies of AI that are involved in an epistemology of outing, Shah argues that AI not only out and thus define queerness, but produce queerness in a state of contamination and risk. The chapter closes with three design propositions that focus on queerness as care, relation, and kinship, which reject normative frameworks that posit queer bodies as AI's Other, but suggest a teleology that produces queerness and technology as conjoined mediations of the body.

Part II Materiality

Departing from the question of genealogies, the second part of the anthology centres on the identification of the body as a site for the politics of queer AI. This part centres on the very real and situated materialities, which come to inform AI systems and become invisibilised within their deployment as disembodied universal machines.

In a chapter on queer and crip technologies, **Ute Kalender** returns to the Harawayan cyborg to question its relevance for contemporary discourses on diversity and AI. Kalender resituates this prominent figure within emerging discourses in disability studies by giving space to embodied queer knowledge. Implementing the experimental methodology of fictocriticism, Kalender enables a narratological practice that embodies AI via the experiences of disabled and queer-crip research subjects, allowing them to speak to AI discourse instead of the other way around. By means of semi-fictional narratives Kalender shows how people with disabilities are indeed and always have been cyborgs when, for example, thousands of them already drive AI-based cars. At the same time, merging with AI is discussed as obstructive, painful, or as simply enforcing conformity with the mandatory norms of performance and productivity.

Michael Klipphahn-Karge's contribution states that artificial bodies often appear as representatives of queer subjects and their embodiment in exhibition contexts. He exemplifies the entanglement of queer and artificial bodies by means of the 2014 artwork *(Female Figure)* by Jordan Wolfson. Targeting an aesthetic of ambiguity as central for queer representational practices, Klipphahn-Karge works through the figure of the robot, a main point of reference of *(Female Figure)* that allows for an embodied perspective on the seemingly disembodied systems of AI. By conveying ambivalences and ambiguities through and within this work of art, his analysis holds out the prospect of breaking down technical disambiguation and stereotyping.

Katrin Köppert's contribution begins with the pathology inherent to menstrual cycle monitoring and birth control to think through notions of subjectivity and desubjectivation. Starting from the premise that feminised and reproductive bodies are unequally reduced to data in biometric applications, either disproportionately captured or misrecognised, Köppert negotiates the detachment of the body from the category of being human and subject constructed by technology from an art and media studies perspective. Putting the artistic work of Tabita Rezaire in conversation with Luiza Prado de Oliveira Martins' GIF essay "Every Direction at Once," Köppert excavates a transgressive aesthetic of incompatibility and conflict, based in the material realities of Black and brown menstruating bodies.

Part III Speculation

After the question of how AI materialises with and through bodies, the third and final part of the anthology turns towards the speculative potential of AI. The last three chapters address the question of futurities and imagination in relation to the question of identification and disidentification and sharply focus on AI as a disruptive element that makes the unity of the human subject incoherent, to instead iterate conjoined and posthuman agencies and productivities. The speculative thus seeks to excavate practices and narratives that turn towards a future and bring it into the present, even if

this present is, first and foremost, speculative, minor, and fragmented, needing to come together through cutting-apart, as Karen Barad might say.

It is this becoming-together that is formative for a reading of AI in **Sara Morais dos Santos Bruss**' argument. Building upon an acknowledgement that AI is not accurate, but immersive, environmental and constantly creating excess, the chapter posits Jeff VanderMeer's novel *Annihilation* and its cinematic adaptation as a central imaginary that reworks AI as immersive, wild, and queer. In such a reading, the wildness that VanderMeer describes is posited as the refusal of algorithmic categorisation and accuracy, to instead point out the constant productions of excess and a different form of agency and non-subjectivity that these excesses might signal towards. At the same time, the article questions whether these excessive infrastructures themselves are not currently under threat, as AI becomes affective and emotional, thus once again formalising queer wildness into a capturable form.

Carsten Junker looks at contemporary engagement and tinkering with AI through literary imaginaries produced within cyberfeminist manifestos. The chapter identifies a tension between the disruptive agendas of these manifestos, their emancipatory rhetorical promises, conceptual innovations and critical claims on the one hand, and the repetitiveness of the generic conventions these texts mobilise on the other. The paper highlights a contradiction that can be observed in the authors' use of the manifesto as a form: while they use this literary form to postulate novelty and call for disruption—thus formally and propositionally actualising the manifesto—the critical and queer potential of the genre is neutralised by its iterative use, thus potentially limiting how AI, as the subject of their proposed disruption, is reimagined and distributed.

Johannes Bruder explores selective inclusions and exclusions that underlie the operations of AI. Starting from the premise that epistemologies of Big Data and the operations of AI are incompatible with queerness, and building on insights into the functions of autistic subjectivity and cognition in the context of AI, Bruder points to the function of autism as an Other that is constitutive of AI. At the same time, he shows that autistic individuals were and are already an essential part of the cognitive infrastructure of real existing AI—whether as test objects, coders, or data workers. In this way, Bruder challenges the forcible inclusion and definition of autistic subjectivity and cognition as a basis of AI. Neuroqueerness is conceived as a performative response to selective inclusion and exclusion that autistic individuals are subject to in social contexts. The forcible and necessary inclusion of certain bodies to produce AI narratives is also a matter of concern for speculating on its ambivalent inclusion, and Bruder identifies a paradoxical situation of the (neuro-)queer that both fixates and ambiguates AI's relation to queer potential.

The anthology is tied together by a final contribution by **Os Keyes**, which serves as a conclusion. In this final chapter, Keyes gives an outlook into gaps and slippages that still need to be addressed, as well as proposing emergent qualities of the volume.

Notes

1 Achille Mbembe has developed the term "necropolitics" to describe the ability to decide who can live and who can die (cf. Mbembe 2011). Here, queerness is both identified and eradicated through the Gay Bomb—its targets become "fags," the gay body is identified in death, in being hit by the gay bomb.
2 Safiya Noble (2018) illustrates how activists made public that a Google search for n-word house or n-word king during the Obama administration would lead to Google Maps taking users to the White House. This example illustrates that "biases" are not always—although very often—simply the result of omissions of specificity due to a belief in a supposed universal. Sometimes, these systems allow for individuals to exploit the working of these systems in targeted ways, while, as Noble reports, the companies responsible for regulating these results can resort to claiming "technological errors" and shun accountability.

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Part I

Genealogies

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1 Queering intelligence

A theory of intelligence as performance and a critique of individual and artificial intelligence

Blair Attard-Frost

Introduction

Many researchers have recently noted that a significant obstacle to effectively measuring, managing, and governing artificial intelligence (AI) systems is the conceptual ambiguity of the term *artificial intelligence* (Bratton 2021; Taeihagh 2021; Crawford 2021; Mishra et al. 2020). Defining AI—and even more broadly, defining *intelligence*—has long been a theoretical challenge in cognitive science and AI discourses. Computer scientists Shane Legg and Marcus Hutter describe the challenge succinctly, stating that a "fundamental problem in artificial intelligence is that nobody really knows what intelligence is" (2007a, 1). In a separate paper, Legg and Hutter (2007b) conduct a review of 71 definitions of intelligence, most of which are sourced from AI and psychology research. Their review indicates that intelligence is commonly associated with a variety of qualities such as learnability, adaptability, goal orientation, ability to solve problems, context sensitivity, and generalisability of knowledge. Because the definitions are derived from AI and psychology research, the "commonly occurring features" they observe place particular significance on environmental interaction, an agent's ability to adapt to different environments, as well as an agent's ability to "succeed or profit" in its goals (2007b, 9). These common features ultimately lead them to adopt a universal definition of intelligence: "Intelligence measures an agent's ability to achieve goals in a wide range of environments" (2007b, 9).

However, by locating intelligence within specific environmental interactions, by attributing significance to goals that are dependent on the values of the agent, as well as by noting the necessity of measurement in recognising intelligence, the definition proposed by Legg and Hutter implies that intelligence emerges from three overarching qualities that they do not directly acknowledge. I describe those three qualities as *embeddedness in action*, *value dependency*, and *measurability*. Philosopher Reza Negarestani captures the significance of those three qualities in stating that "the question of 'what intelligence is' is inseparable from the question of what it must do and what its values are" (2018, 31). Intelligence is always attributed to an activity or set of

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activities that are valued as being "intelligent" through some measure of the activity's quality.

In this chapter, I argue that if intelligence must be measurable, valued, and embedded in action in order to be recognised as intelligence (as opposed to unintelligence or non-intelligence), then intelligence ought to be understood as a type of performance. My exploration is guided by three main questions:

1 *Ontological*: What is intelligence, and how can its presence be identified in action?
2 *Critical*: How can a definition of intelligence be queered? In other words, how might the dominant values underlying the definition be challenged such that alternative values can emerge?
3 *Practical*: What "downstream effects" (Mishra et al., 2020, 2) does a definition of intelligence have on the development, management, and governance of AI systems?

I approach those questions by embracing the normative variability that often frustrates attempts to define intelligence. I do not define intelligence with reference to any functional abilities, values, or normative performance outcomes that are often described as being essential to intelligence such as learnability, adaptability, generalisability, goal orientation, or problem-solving. Instead, I define intelligence in functionally and normatively agnostic terms as *value-dependent cognitive performance*. Rather than centring the supposedly universal functions and norms underlying the many definitions surveyed by Legg and Hutter (2007b)—such as learning, adaptation, individual ability and agency, or success in problem-solving—defining intelligence as value-dependent cognitive performance centres interdependencies between agents, their environments, and their measurers in collectively constructing and measuring context-specific performances of intelligent action. For example, in a conventional view of intelligence, the intelligence of a customer service chatbot is measured with reference to the chatbot's success as an individual agent in applying its cognitive abilities to solving customer query problems (e.g., the chatbot's ability to process the customer's natural language inputs, its ability to predict and learn from patterns in customer interactions, its ability to independently adapt to a wide variety of use cases or service contexts). In contrast, in defining intelligence as value-dependent cognitive performance, the intelligence of the chatbot must be measured with reference to its performance within a broader, interdependent cognitive system which also includes the values and abilities of the customers the chatbot serves, the values and abilities of the chatbot's designers and developers, as well as the values and abilities of many other cognitive agents who collectively construct and measure the contexts in which the chatbot performs.

In the next section, I establish a conceptual grounding for that definition by reviewing and synthesising perspectives on the ontology of cognition and the ontology of performance. I then propose a theory of intelligence and a

framework for analysing intelligence that frames intelligence within particular domains of action such as the actions involved in performing individual human intelligence or AI. I situate intelligence across cognitive, normative, and performative dimensions of analysis that correspond to the embeddedness, value dependency, and measurability of intelligence. In the "Queering intelligence" section, I propose queering as a method of unsettling dominant perspectives and exploring alternative perspectives within any domain of intelligence. I then conduct a brief analysis of two influential domain-specific theories of intelligence: one from the domain of individual human intelligence, and one from the domain of AI. I then outline a set of exploratory questions that challenge each theory's assumptions about which cognitive, normative, and performative qualities constitute individual human intelligence and AI. I conclude in the "Re-imagining intelligence" section by describing the implications of those exploratory questions for future ontological, critical, and practical studies of intelligence and AI.

Intelligence as performance

Cognition

If intelligence is a quality of cognitive activity, then an understanding of what intelligence is must begin with an understanding of what cognition is. From the 1990s and into the 2000s, cognitive sciences along with many fields of social study began an ecological turn. This turn upended the traditional cognitivist understanding of cognition as a rigidly individualistic and purely embrained phenomenon, pointing instead toward new cognitivists that, taken together, have re-imagined cognition as a generalised information-processing phenomenon that is enacted by and distributed throughout complex, interdependent systems of minds, brains, bodies, and environments (exemplified by the work of Varela et al. 1991; Rogers and Ellis 1994; Hutchins 1996, 2010; Clark and Chalmers 1998; Hollan et al. 2000; Bateson 2000; Thompson 2010; Menary 2010). Literary critic and posthumanist theorist N. Katherine Hayles synthesises these new cognitive theories with decades of empirical work at the intersection of cognitive psychology, cognitive biology, neuroscience, and AI. Hayles argues for a posthumanistic ontology of cognition that decentres human cognition in favour of a more extensible ontology that can be applied to all living and nonliving agencies. Accordingly, Hayles describes cognition as "a process that interprets information within contexts that connect it with meaning" (2017, 22).

Crucially to her ontology, Hayles explains how recent research on the interplay of cognition and consciousness has revealed that conscious cognitive activities (e.g., symbolic reasoning, linear thinking, self-reflection, voluntary memory recall) are informed by nonconscious cognitive activities that operate outside of conscious awareness (e.g., maintenance of sensory coherence across time, involuntary memory recall, as well some of the learning and recall processes involved in pattern recognition). Hayles characterises the relationship

between the two modes of cognition—conscious and nonconscious cognition—as deeply interdependent, but primarily driven by the outcomes of nonconscious information processing, stating that "conscious behaviours and goals are always already influenced by inferences that nonconscious cognition has performed beyond the ken of consciousness" (2017, 52). In this widened view, even phenomena that are conventionally regarded as non-cognitive—such as emotion, affect, instinct, or intuition—are recast as cognitive phenomena by virtue of the vital role that nonconscious information-processing activity plays in producing emotional, affective, instinctive, or intuitive states. Just because we are not aware that our brains and bodies are processing information or aware of the biomechanical or psychological reasons for that processing does not mean that cognition is not occurring—it simply means that we are not conscious of the cognitive activity that is occurring. In either case, to make any sort of qualitative measurement of a cognitive activity requires an understanding of cognition as a phenomenon that is consciously or nonconsciously performed.

Performance

Cognitive activity can exhibit positive quality (intelligence) or negative quality (unintelligence) based on how it is *performed*. In discussions of the operation of AI systems, the "performance" of the system is often invoked without exploring the precise meaning of performance or its significance for human-AI interaction. An approach to understanding performance in the context of human-computer interaction (HCI) is described by HCI scholar Jocelyn Spence (2016). Spence integrates theories of performance from philosophy of language, gender studies, and performance studies to propose practical methods of designing and managing HCI. Spence retraces the genealogy of those theories, beginning from the philosophy of language proposed by J. L. Austin, through the theory of gender performativity proposed by Judith Butler, and into the practical concerns of interaction design and performance design.

In Austin's (1975) conception of performativity, the primary function of language is to enable speakers to perform "speech acts" with which they can attempt to pursue desirable courses of social action. In their theory of gender performativity, Butler expands Austin's conception of performativity from purely linguistic practices into a more general domain of social practices. Butler examines how identity is iteratively constructed and constrained through various social practices including speaking, but also including other social practices such as thinking, dressing, disciplining, consuming, and sex. Butler has particular interest in how gender identity is determined and developed in relation to the social expectations placed on gendered subjects, describing gender as "always a doing, though not a doing by a subject who might be said to preexist the deed" (2006, 33). Butler's emphasis on doing rather than being is echoed by performance studies scholar Richard Schechner

(2013), who defines performance as "showing doing," a process wherein particular qualities attributed to one or more performers are made perceptible and measurable through action in a particular context. As *showing doing*, the epistemic stakes of performance differ from those of mere *doing*: performance refers to self-externalising action that has the potential to make the performer's beliefs, values, and abilities known to an audience.

In their theory of "posthumanist performativity," the philosopher Karen Barad places a keen focus on the ontological and epistemic attributes of performance. Extending Butler's social account of performativity into a metaphysical account, Barad proposes a theory of performativity in which performance is interpreted in extremely general terms as "the world's iterative intra-activity" (2003, 823). In Barad's view, the basic unit of ontological analysis is not an object, but rather, a phenomenon. Barad regards phenomena as entity relations in which a set of the world's "measuring agencies" and "measured objects" intra-act to cause changes in the world through the measuring agency's measurement of the object (2003, 815). Barad's ontology of performance tacitly subscribes to a very particular set of cognitive-scientific and information-realist assumptions: objects themselves cannot be known, only the information collected during the measurement of "measured objects" can be known. A measuring agency can only process that information into meaning by performing cognition to interpret the values and abilities of the measured object, and the measuring agency's performance simultaneously reveals the values and abilities of that measuring agency. Barad's metaphysics centres the triadic form of phenomena—sets of cognitive performers, performance-measuring audiences, and interdependent performance measurements—rather than centring unknowable objects-in-themselves.

The posthumanist ontology of cognition proposed by Hayles (2017) is well-aligned with the posthumanist ontology of performance described by Barad. For Hayles, a cognitive agent's performance is embedded in and influenced by its ecological and historical context. Therefore, intelligence is only measurable in specific cognitive performances that are situated in contexts that influence cognitive activity and constrain cognitive ability. To both Hayles and Barad, a measure of intelligence is always a triangulation involving the values held by an audience, their ability to measure a performer's cognitive activity, and a measurable cognitive activity that has been constructed and constrained by its context. This view of intelligence differs from conventional views of intelligence in emphasising that intelligence emerges from specific, interdependent cognitive activities within specific performance contexts rather than from the supposedly independent cognitive abilities of individual cognitive actors.

Domains of intelligence

Taken together, the perspectives on cognition and performance advanced by Hayles and Barad provide grounding for a theory of *intelligence as*

value-dependent cognitive performance. Intelligence is understood as a performative expression of cognition: a showing doing through which the value of a cognitive performance can be measured by a specific audience within a specific context.

In his critique of computational power and AI, computer scientist Joseph Weizenbaum comments that "intelligence is a meaningless concept in and of itself. It requires a frame of reference, a specification of a domain of thought and action, in order to make it meaningful" (1976, 204–205). Weizenbaum's concept of a "domain of thought and action" provides a foundation for analysing intelligence across multiple *domains of intelligence*: sets of similar cognitive activities performed by similar cognitive agents. Weizenbaum claims that the specific cognitive activities at play in such domains are characterised by the manner in which "intelligence manifests itself only relative to specific social and cultural contexts" (1976, 205). He provides the example of individual human intelligence as one such domain in which intelligence has become characterised by "the widely accepted and profoundly misleading conviction that intelligence is somehow a permanent, unalterable, and culturally independent attribute of individuals" (1976, 204). In addition to the intelligence of individual humans, many other such domains have been imagined: the intelligence of collectives and organisations, animal intelligence, plant intelligence, threat intelligence, general intelligence, superintelligence, as well as alternative framings of AI such as machine intelligence and synthetic intelligence. This list of examples is by no means exhaustive—many other domains have been imagined, and many more are imaginable. All that is required to specify a domain of intelligence is a set of similar cognitive activities performed by similar cognitive agents within similar contexts. To analyse how intelligence functions as value-dependent cognitive performance within a specified domain therefore requires an approach to unpacking how cognition, performance, and values all form interdependencies and interoperate within that domain.

Dimensions of intelligence

Across any imaginable domain of intelligence, the qualities of embeddedness, value dependency, and measurability will be intrinsic to any intelligent activity within that domain. I suggest that those three overarching qualities correspond to three *analytical dimensions* implicit in any imaginable domain of intelligence:

1 *Cognitive*: The cognitive dimension of a domain consists of activities in which information is interpreted and connected to meaning either consciously or non-consciously (i.e., cognitive activities). Some examples of cognitive activities include sensing, cellular signalling, pattern recognition, learning and adaptation, problem-solving and decision-making processes, voluntary and involuntary movements, and memory recall.

2 *Normative*: The normative dimension of a domain consists of the values and normative mechanisms that influence cognitive activity. For example, values could include adaptability, timeliness, autonomy, creativity, productivity, responsibility, sustainability, or privacy; normative mechanisms could include social norms and sanctions, strategies, laws, policies, or ethical beliefs.
3 *Performative*: The performative dimension of a domain consists of the performance measurement mechanisms that can be used to evaluate the quality of cognitive activity in relation to the values of the domain's normative dimension. For example, performance measurement mechanisms could include questionnaires, standardised tests or other ability-testing instruments, performance data and management systems, scientific experiments, observation of creative works, or many other forms of quality assessment.

Together, these cognitive, normative, and performative dimensions of intelligence constitute an analytical framework that can be applied to describe the phenomena that exist in any imaginable domain of intelligence. To return back to the example of a customer service chatbot: an analysis of the chatbot's cognitive dimension might consider the data collection, language processing, machine learning, and human decision-making activities involved in the chatbot's design and operation; an analysis of its normative dimension might consider the values of the chatbot's designers and users, and the laws or policies that govern the chatbot's operation; an analysis of its performative dimension might consider the performance indicators or benchmarks used to measure the chatbot's success in improving customer satisfaction, as well as the quality assurance or management systems used to observe, measure, and organise the activities of designers and developers. However, to make this framework amenable to critical analysis as well as to descriptive analysis, an additional method is needed that can be used to critique the underlying values of a domain-specific definition or theory of intelligence and explore alternative values.

Queering intelligence

Queering as exploratory method

"Queering" has been employed as a verb by many queer people and communities, usually to describe a process through which the dominant values of heteronormative and cisnormative cultures are exposed and challenged by queer cultural practices. In her approach to queer interaction design, HCI scholar Ann Light describes queering more generally as "a space-making exercise" that challenges the dominant perspectives of a particular social context by exposing the ontological and normative assumptions implicit to those perspectives (2011, 433). Light explains that when applied to practices of design or analysis, queering functions as an exploratory method that aims

to produce "an absence of dogma and a mutability that allows new truths, perspectives and engagements to emerge through a refusal to accept definition" (2011, 433). As a method, queering can be applied to critique the cognitive, normative, and performative dimensions implicated in a domain of intelligence. Queering can also enable exploration of alternative perspectives on the boundaries between intelligent activity and unintelligent activity within that domain.

When combined with a theory of intelligence as value-dependent cognitive performance, queering allows for more than simply describing the cognitive, normative, and performative assumptions at play in a specified domain of intelligence. Queering enables critique of those assumptions by refusing their underlying values by default, questioning what alternative values might exist, and exploring discursive spaces in which those values could be given voice. Collectively, these theories and methods provide a critical framework for queering intelligence.

The following section will queer intelligence by applying that framework to a brief analysis of two primary texts and a discussion of secondary sources that are critical of the assumptions made by those texts. To demonstrate the applicability of the framework to multiple domains of intelligence, the primary texts were selected to be representative of two distinct domains of intelligence: individual human intelligence and AI. The primary texts represent the main cognitive, normative, and performative assumptions implicit in two influential, domain-specific theories of intelligence: John Carroll's three-stratum model of individual human intelligence, and Alan Turing's ontology of AI. Key findings from the analyses will then be mapped onto each of the two domains and three dimensions of intelligence and compiled into a set of exploratory questions.

Individual human intelligence

Researchers across many disciplines have long noted that methods of measuring the intelligence of individual humans such as IQ testing are rooted in Social Darwinist, eugenicist, white supremacist, colonialist, misogynistic, ableist, and classist value systems (Nails 1983; Belkhir 1994; Dennis 1995; Silverstein 2000). The genealogy of those measurement methods can be traced back to a historic desire in Western scientific institutions to attempt to use (pseudo)scientific practices to uphold the supposed superiority of dominant groups, install their values as universal values, and legitimise their exploitation of supposedly inferior groups. Cognitive scientists Abeba Birhane and Olivia Guest (2021) note that intelligence measurement methods that assume a universal ontology of intelligence are not truly universal at all, instead imposing the values of dominant social groups upon normative assumptions of how and why cognition ought to be performed.

For example, psychologist John Carroll's three-stratum model of cognitive ability at first correctly acknowledges that "every ability is defined in terms

of some kind of performance, or potential for performance" (1993, 4). The three "strata" of Carroll's model then divide the ontology of individual human intelligence into (1) the performance of general intelligence; (2) the performance of a set of broad cognitive abilities (e.g., fluid and crystallised intelligence, general memory and learning, broad retrieval ability, processing speed); (3) the performance of a larger set of narrow abilities that each correspond to one of the broad abilities (e.g., memory span, quantitative reasoning, semantic processing time, perceptual speed). Correlations between these three strata are derived from Carroll's comprehensive meta-analysis of decades of empirical psychometric research on human cognition. But despite all of his empirical rigour, Carroll fails to discuss the values and social norms which caused these particular measures of cognitive performance to become embedded in the history and practice of psychometric research. Even more troublingly, Carroll ultimately suggests that his model is applicable to the decision-making needs of education policy, economic policy, and workforce development policy. He is particularly concerned that "job requirements in technically oriented economies are becoming increasingly more demanding," and sees the measurement of individual intelligence as vital in solving that problem, observing that a "substantial portion of the population at any given time may not have, or be able to develop, the abilities to meet these requirements" (1993, 714). Carroll offers this policy guidance with no attempt to acknowledge or question the social, political, and economic values that are implicit in his model.

As a result, Carroll's model of individual human intelligence measures cognitive activity in a way that reproduces three harmful norms of cognitive performance. Firstly, the model measures intelligence with reference to an extremely constrained and highly standardised set of cognitive activities performed by individuals, rather than with reference to situated activities performed in relation to other individuals and social environments. Secondly, this model then extrapolates that narrow set of performance measures to be representative of the individual's "general intelligence" across all possible cognitive performances. Through extrapolation and generalisation, Carroll attempts to disembed intelligence from the extreme variability of real action, reframing intelligence instead as a standardised composite measure of a highly constrained cognitive performance. Thirdly, the model upholds political and economic values of capitalist individualism, viewing intelligent individuals as those who are most able to independently leverage their cognitive abilities in order to maximise their utility in capitalist economic contexts.

Re-theorising intelligence as value-dependent cognitive performance challenges all three of those norms as well as the underlying values that support them. Intelligence is value-dependent, cognitive, and performative: it is a phenomenon in which a performer, an audience, and a performance measurement all intra-act within a specific performance context in order to produce some measurement of intelligence. Therefore, it is not possible to accurately measure the intelligence of an individual cognitive agent in contrived isolation from other agencies. The values and abilities of a performer

cannot simply be decoupled from the values and abilities of the audience, for the performance itself is a showing-doing that unfolds according to their shared values and abilities. As well, cognition is not a rigidly individualised and embrained phenomenon as the traditional cognitivist view once held. Cognitive activity and ability in humans are socially and ecologically distributed across loosely bounded cognitive systems, which include complex networks of human-human interaction, human-technology interaction, and human-environment interaction.

Yet, as psychologists Gary L. Canivez and Eric A. Youngstrom (2019) demonstrate in their criticism of Carroll's model—as well as other psychometric models and instruments that Carroll's model has been synthesised with—the dominant psychometric mechanisms for measuring human intelligence remain deeply committed to an individualistic account of cognition. With its focus on the cognitive ability of individuals rather than of groups or other social systems, cognitive individualism naturally lends itself to the ableist tendencies of capitalist individualism. Under capitalist individualism, the pathology of disability is traced to a supposedly innate weakness of the individual in contributing to economic productivity, rather than to the inability of the socio-economic systems surrounding the individual to commit necessary resources to supporting the individual's needs, enhancing their abilities, and improving their quality of life (Mitchell and Snyder 2015. Galer 2012; Russell and Malhotra 2002). By taking a rigidly individualistic view of intelligence rather than a more systemic or mutualistic view, theories of human intelligence often foreclose the possibility of achieving cognitive complementarity or performance improvement from well-designed and well-mediated human-human and human-technology interactions. For example, in many social situations, an individual's cognitive performance can be enhanced by using information stored on a mobile device to support in memory recall, by using a software application or other device to enhance their sensory abilities, or by receiving linguistic support in completing a task from an interpreter or translator. Artificially constraining the performance of human cognition to an in vitro testing situation—one that is atomised, standardised, disintermediated, and disembedded from social and ecological action—is not an accurate reproduction of how human cognition is performed in vivo.

Artificial intelligence

The most famous ontology of AI is perhaps that of Alan Turing's *Imitation Game*, in which the intelligence of a computer system is tested through its exchange of text messages with a man and a woman. To win the game and thus be judged as "intelligent," the computer must be able to imitate human intelligence by differentiating the man from the woman. To do this, the computer must correctly interpret the meaning of gender-performative messages such as "my hair is shingled, and the longest strands are about

nine inches long" (1950, 434). At first glance, Turing's understanding of AI shares many features with an understanding of intelligence as value-dependent cognitive performance. The assigning of a gender differentiation task to the computer is especially notable: the task is a multifaceted and intra-active phenomenon, involving not only the computer's attempt to perform cognition according to human social and linguistic norms, but also the man and the woman attempting to perform the social norms of masculinity or femininity in such a way as to convince the computer of their wo/manhood. The ability of the man and the woman to perform cognition according to socially situated norms of gendered action is being tested just as much as the computer's ability to perform cognition according to socially situated norms of intelligent action. Additionally, Turing correctly does not locate intelligence in the technologies of the computer system itself, but rather, in the quality of its socially embedded actions. For Turing, intelligence is a property of the humanlike cognitive activities the system attempts to imitate, such as sensing, thinking about, learning from, and making meaning from its conversations with the man and woman.

However, upon closer analysis of its normative assumptions, Turing's ontology of AI appears deeply committed to anthropocentric and utilitarian values in its framing of intelligence. Indeed, the very premise of the *Imitation Game* is anthropocentric: computer systems ought to imitate the behaviour of humans because the behaviour of humans is intrinsically worthy of imitation. This assumption instals human intelligence as a supreme domain of intelligence that all other imaginable domains of intelligence ought to be measured against and aspire to. Unfortunately, implicit anthropocentric values in the vein of Turing's are common in AI discourses and ontologies. Religious studies of AI have traced those values to the Judeo-Christian assumption of an anthropocentric universe in which man represents the height of God's creation, and thus, the form and function of man is thought to be intrinsically desirable (Ferrando, 2019; Geraci, 2010).

Critics of recent developments in AI have called the intrinsic value of human cognition into question. For example, Asp notes that the human activities responsible for the development of dangerous AI systems reveal that human intelligence in the space of AI development is often "compulsively and irrationally driven" by market forces (2019, 64). Crogan (2019) characterises the development of military AI applications as an instance of "emergent stupidity," a phenomenon in which humans engage in nominally "intelligent" cognitive activity to automate decision-making processes, even though those automated processes may eventually become so fast and so complex that human decision-makers will no longer have the intelligence needed to reliably control them. In these examples, human cognitive activity can be interpreted as intelligent only within an extremely narrow performance context, such as reaping short-term profits or efficiently destroying an enemy on a battlefield. But in a broader performance context that includes a broader range of values and outcomes, these "intelligent" activities may reveal themselves to be highly

self-destructive and unintelligent. Favouring human intelligence as the ideal, default model for AI in all situations encourages the designers and developers of AI systems to evade critical analysis of the values and biases that often underwrite human cognition and human decision-making.

Utilising AI systems to advance unintelligent human decision-making suggests that there are not only anthropocentric values underlying the systems, but also utilitarian values. Just like in the domain of individual human intelligence, perceptions of economic utility tend to have a significant influence in determining what kind of cognitive activities performed by machines are deemed to be "intelligent" versus "unintelligent." Turing believes it could be technically possible to design a machine for the simple purpose of enjoying the taste of a dessert, but he dismisses any attempt to make such a machine as "idiotic" (1950, 448). Turing dismisses the idea of the dessert-eating machine not because of any technical impossibility, but because of a perceived lack of utility value in the cognitive activities associated with dessert-enjoying.

At first glance, this hypothetical dessert-eating machine seems like little more than a droll side note in Turing's argument. However, this statement not only tells much about Turing's epistemic values in developing AI systems—favouring reasoning and problem-solving over sensing and experiencing—but also about his beliefs regarding which qualities fundamentally constitute intelligence. Turing clearly regards AI as a performance involving the imitation of human intelligence, but more subtly, he also seems to expect that any intelligent activities performed by a machine must necessarily be activities that offer some kind of economic utility to humans. Non-utilitarian activities are assumed to be non-intelligent by default. With utility maximisation as a norm, committing resources to a machine only to allow it to explore its own sensual desires would certainly seem to be "idiotic," unless we could somehow utilise the machine's performance of dessert-eating to solve an economic problem. If the machine were successfully used as a taste-tester in some product design activities conducted by a food manufacturer, would its cognitive performance then suddenly shift from "unintelligent" to "intelligent?" Forcing utilitarian values on AI performance binds "intelligent action" to a pre-critical conception of "economically useful action." In a more critical analysis, the values imposed on the performance of AI systems can create harmful expectations for the broader cognitive systems that the AI systems have agency within. If it is "idiotic" for a machine to indulge in sensual pleasures such as dessert-eating, then it also follows that it is idiotic for a person to indulge in the same pleasures—unless their pleasure-seeking can somehow be utilised to produce economic value.

Exploratory questions

In Table 1.3, the main concerns raised throughout the preceding analysis are compiled and arranged according to the domains and dimensions of

Table 1.3 A compiled list of exploratory questions pertaining to the cognitive, normative, and performative dimensions of individual human intelligence and AI

Domains of Intelligence	*Dimensions of Intelligence*		
	Cognitive	*Normative*	*Performative*
Individual Human Intelligence	• Why should/can cognition be understood as separable from social action and technological mediation?	• What expectations do dominant politics, economics, and cultures place on the individual? • How do those expectations shape the individual's cognitive activity?	• What is lost by measuring intelligence based on an individual's linear reasoning or problem-solving performance rather than other expressions of cognitive performance? • Why is human intelligence typically measured based on individualist values? What alternative value systems and measurement mechanisms might be possible?
Artificial Intelligence	• Why should/can cognition in AI systems be understood as technologically situated but not socially situated?	• Why should human cognition be imitated by machines? • What properties of human cognition might be undesirable for machines to imitate? • Why should machine cognition be treated as a utility for humans? What alternative forms of human-AI relations might be possible?	• How might some performance measures for AI systems (e.g., accuracy, speed, productivity, efficiency) reproduce harmful norms? What alternative measures might be possible?

intelligence they correspond to. Following Light's (2011) understanding of queering as space-making, the questions are deliberately left unresolved so as to create new discursive spaces for alternative perspectives and values in future research. These are critical, exploratory questions—they are intended to generate problems rather than solutions.

Re-imagining intelligence

These exploratory questions indicate that there is a sizable agenda for future ontological, critical, and practical studies of intelligence and AI. Beginning at the ontological level, the above questions suggest a need to continue carrying out this chapter's systematic re-imagining of what intelligence is. A theory of intelligence as value-dependent cognitive performance will be useful in that pursuit, as the theory and framework presented here can be applied to any imaginable domain of intelligence.

In the domain of AI, there are many other recent perspectives which will also be useful in imagining new ontologies of and critical approaches to AI. In recent years, social constructionist perspectives on the development and use of AI systems have gained currency in AI discourses. These perspectives suggest that the cognitive activities involved in AI comprise far more than the information-processing associated with data, algorithms, software, machine learning models, and other computational resources. Socially constructed AI breaks from the ontological assumptions of Turing by re-imagining AI as a globally integrated and technologically mediated cognitive system that evolves within diverse networks of cognitive agents, values, social structures and environments, as well as tangible and intangible resources (see for example: Bratton 2021; Crawford 2021; Crawford and Joler, 2018). Additionally, re-imaginings of AI are emerging that draw upon Indigenous ontologies and epistemologies to break from the anthropocentrism of Turing. Applying the knowledge systems of the Hawaiian, Cree, and Lakota peoples, Lewis et al. (2018) re-imagine AI systems as comprising "an extended 'circle of relationships' that includes the non-human kin—from network daemons to robot dogs to artificial intelligences (AI) weak and, eventually, strong—that increasingly populate our computational biosphere." The Indigenous Protocol and Artificial Intelligence Working Group have published a position paper which presents a variety of perspectives on the theory and practice of AI systems based on the cultural knowledge of many different Indigenous peoples and tribes (Lewis et al. 2020). These re-imaginings of AI decenter the human from AI-human relations, valuing kinship and mutual stewardship of the planet rather than subordination, extractivism, and utility maximisation.

At the practical level, it is necessary to continue re-imagining what intelligence ought to do and how those goals can be achieved. Many practical re-imaginings of AI are already keenly focused on either rehabilitating utilitarian AI or moving beyond utilitarian values altogether. A number of AI ethics guidelines and performance measures have been proposed that

emphasise values such as community (Häußermann and Lütge 2021), care (Yew 2021), justice (Le Bui and Noble 2020), and sustainability (Dauvergne 2020). A significant practical challenge will be to combine those values with new ontologies of AI and operationalise those values in AI systems, applications, and governance structures. This may also entail a re-imagining of the ethics and application of intelligence more generally. Marxist critics of AI and labour automation have theorised that AI systems are merely new appendages of political-economic structures such as "cognitive capital" (Moulier-Boutang 2012) and "means of cognition" (Dyer-Witheford et al. 2019) that were formed around human cognitive labour prior to the advent of mechanisation or digital technologies. A decolonial critique of computational and cognitive sciences has been voiced by Birhane and Guest (2021), who observe that cognitive sciences are predominantly driven by Western white cis-male value systems. To challenge those values, the authors call for a re-imagining of the field's scientific, managerial, and pedagogical practices, which to this day often reinforce oppression by making pseudoscientific assumptions about the intrinsic value of historically oppressed peoples.

Finally, I must acknowledge that although this chapter advances a theoretical basis and agenda for re-imagining intelligence, the analysis conducted here is limited by the small selection of domains and texts involved in the analysis. Future studies could benefit from applying the theory and framework outlined here to analyse other domains of intelligence, other influential theories and texts, as well as perceived boundaries between intelligence and unintelligence in various social, economic, and cultural contexts. It is also important to note that if queering is to continue to be applied to such studies as a "space-making ploy" (Light 2011, 433)—an exploratory method for unsettling the ontological and normative assumptions underlying intelligence, and for enabling new perspectives and discursive spaces to emerge in which those assumptions can be challenged—then queering intelligence will only the beginning of a larger project of re-imagining intelligence across its many domains, contexts, and applications.

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2 Neural "freedoms"

Population, choice, and machine learning

Orit Halpern

Neural "freedom"

Contemporary American political economy integrates older ideas of population, race, and species survival inherited from the 18th and 19th centuries with new assemblages of technology and epistemology. Characterised by slogans such as "Make America Great," attacks on reproductive rights and freedoms such as the recent Dobbs decision, apocalyptic and evangelical religious fundamentalism, and violent forms of xenophobia and racism, the current Right, and particularly the Republican Party, appears to extend older histories of race, nation, and sex, while using the latest in media technics and propaganda.

The focus of this chapter is to interrogate this intersection. While the relationship between the Right, post-truth, suggestion algorithms, and social media has long been documented, rarely has there been extensive investigation of how ideas of choice and freedom become recast in a manner amenable to machine automation and to the particular brands of post-1970s alt-right discourses. An analysis of this history demonstrates a new logic within algorithmic and artificial intelligent rationalities that intersects with, but is also not merely a recursive repetition, of earlier histories of eugenics and racism. This situation provokes serious challenges to political action, but also to our theorisation of histories of race and sex capitalism. In this essay I will turn to discuss the history of the neural net, and its relationship to economics and finance, then I will turn to asking about the implications for the present.

The question of population

Economy has long been about the production and reproduction of social orders. Since Thomas Malthus in the 18th century, economics, as a discipline and practice in the West, has been grounded in population and by extension species and sexual reproduction. For Malthus, population is the fundamental infrastructure for the economy. But population could also threaten economic prosperity. Malthusianism posits that populations, and bodies, are only

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valuable as long as they produce labour beyond their metabolism. Populations that grow too large become invaluable and threaten national survival due to overwhelming the carrying capacity of their environment. The wealth of nations is thus contingent on managing the size of populations. This is clearly a racist and eugenicist argument. By deduction, populations are valuable only insofar as they are profitable, and therefore certain groups deemed invaluable can be eliminated (Malthus 1986; Halpern and Mitchell forthcoming).

However, since the late 1930s, but in practice really only since the post-World War II period, economic discourse has been supplanted by a new discussion about markets not as matching supply and demand but instead acting as data processors. The idea of a market was recast in terms of communication and information. This is one of the hallmarks of certain branches of neoliberalism, which is why such theories are so closely affiliated with both computation and communication science and finance—most of which runs on computers (Mirowski 2002).

In an essay that looms large over the history of contemporary conservative and libertarian economic thought, Friedrich Hayek inaugurated a new concept of the market:

> The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate "given" resources-*if "given" is taken to mean given to a single mind which deliberately solves the problem set by these "data."* It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilisation of knowledge not given to anyone in its totality.
>
> (Hayek 1945, 519–520; author's emphasis)

This was no small claim. Human beings, Hayek believed, were subjective, incapable of reason, and fundamentally limited in their attention and cognitive capacities. If economics had imagined a liberal agent with a Cartesian mind, making reasoned calculations on perfect data sets, this was something else entirely. At the heart of Hayek's conception of a market was the idea that no single subject, mind, or central authority can fully represent and understand the world. He argued, "The 'data' from which the economic calculus starts are never for the whole society "given" to a single mind [...] and can never be so given" (Hayek 1945, 519–520). Only markets can learn at scale, and suitably evolve to coordinate dispersed resources and information in the best way possible.

When viewed within the context of Hayek's life work the revolutions in this thought are manifold. First, Hayek posits that markets are about co-ordinating information, not matching supply and demand; a critical first step, as historians such as Philip Mirowski have noted, towards contemporary notions of information economies (Mirowski 2002; 2006). Second, Hayek's model of learning and "using knowledge" is grounded in the idea of a networked intelligence embodied in the market. Markets can allow the creation of knowledge outside of and beyond the purview of individual humans. "The whole acts as one market, not because any of its members survey the whole field, but because their limited individual fields of vision sufficiently overlap so that through many intermediaries the relevant information is communicated to all" (Hayek 1945, 526). The market therefore embodies a new form of what I would label as an *environmental* intelligence; which is to say a notion of cognition and decision-making dispersed into the world and possessed by entities outside of the human. The data upon which such a calculating machine operates dispersed throughout the society and decision-making is a population-grounded activity derived from but not congruent with individual bodies and thoughts. Fourth, the corollary of this environmental intelligence, is that populations become infrastructural, valuable in and of themselves. Population is the grounds for markets. Groups are not only matters of labour power, and therefore potentially invaluable if they cannot work, but fundamentally assets in and of themselves. This new ideal of population as a site of value, one that embodies itself in fantasies of big data, analytics, and social networks is very important to note. This is population, perhaps life itself, as infrastructure for calculation of economy or computing. Finally, in this transformation, the very idea of the liberal subject is remade. Away from reasoned objectivity to subjective limited decisions. *Freedom* is thus reconstituted, as the freedom to become infrastructure, not the freedom to exercise reasoned decisions. Freedom is only freedom to become part of the market. Hayek elaborated that freedom was not one of willful agency, but rather freedom from coercion. While this could be understood as necessitating legal and humane infrastructures to allow all individuals to access the mythic market, neoliberal thinking and the Republican Party did not interpret in this direction.

This poses a radical question: if economy is now grounded in population as an asset or infrastructure, and if these populations are now no longer about supply and demand, or limited resources, but rather about information, then would this not be an opportunity to radically revise older tropes of sexual and biological determinism?

The neural network

The history of the neural network suggests just such a possibility. If Hayek imagined a distributed intelligence, he did not dream alone. Already in 1949, psychology announced a new concept of the mind. "It is impossible," Canadian

psychologist Donald O. Hebb wrote, that "the existence of set but to find how it acts and above all to learn how it has the property of consistent, selective action […]" (Hebb 1949, 7). What Hebb discovered was that neurons appeared to "learn" or be "influenced by the pre-existent activity." This previous firing taught neurons to associate with other neurons when activated by particular stimuli. When synapses fired in concert this increased the probability of cognition. In neuro-science, and later machine learning, the finding was summarised as: Cells [i.e. neurons] that fire together, wire together.

Hebb was among many to ponder the dynamic mechanics of the brain. In 1943, the McCulloch-Pitts model of the neural net was introduced, and Hebb apparently was influenced by this research and cybernetics. The neural net was perhaps the first logical demonstration of how neurons could theoretically (at least) physically compute logical problems; proving that psychic processes could emerge from physiology (Halpern 2014, 223–238).

Such abstract notions of minds that anticipate contemporary deep learning did not come from nowhere. Hebb was working with individuals who had suffered injuries to the brain; a problem that was of increasing concern during and after the Second World War. In his research he documented how different cognitive functions might return over time even though parts of their brains were injured. Victims of stroke and accidents all appeared capable, over time, of regaining functions initially lost with the injury.

Hebb even found that often cognitive skills and new modes of action could be learned by the injured subject, and he assumed this was the result of the neurons finding new connections circumventing the injury. Correlating these observations with studies of neurons, EEGs, and other rather theoretical and imperfect (by our standards) efforts to visualise neuronal action, Hebb came to the conclusion that networks of neurons are capable of learning by reorganisation (Hebb 1949).

Hebb sought a psychology outside of behaviourist obsessions with stimulus-response. In his imagined psychological system neurons "process" stimulus, not merely respond to them. Attention therefore in his formulation was a critical category to reintegrate into psychological study. "One important meaning of 'attention' or the like is the reference of a partly autonomous, or non-sensory cerebral activity, the 'autonomous central process'," Hebb wrote. Attention, for Hebb, demonstrated that it was neurons making decisions and coordinating that led to what humans perceive. Perception and cognition were increasingly part of the same channel (Hebb 1949, 13).

Attention and therefore also cognition, he concluded, was networked and neurons assembled in certain arrangements might be capable of functioning in ways that were unanticipatedly from their discrete biology or location. Hebb intended his work as an attack on psychological testing, particularly the racist Binet IQ tests, and the concept that people stored specific pieces of discrete unrelated data and that individuals could not be taught or trained

(Hebb 1949; 1937; 1942; 1938; Hebb and Penfield 1940). His research attacked both genetic determinism and behaviourism; demonstrating the complex possibilities (and as we shall see problems) of imagining a world of networked evolving intelligences.

Witnessing the ability for brains to seemingly reorganise their networks to recover also denoted a theory of memory and storage. Hebb elaborated that these networks, today labelled "Hebbian synapses," were syncopated in time and could be trained, "Let us assume that the persistence or repetition of a reverberatory activity (or 'trace') tends to induce lasting cellular changes that add to its stability … When an axon of cell A is near enough to excite a cell B and repeatedly or persistently takes part in firing it, some growth process or metabolic change takes place in one or both cells such that A's efficiency, as one of the cells firing B, is increased" (Hebb 1949, 62). The model posited that neurons that fire in temporal relationships to one another (syncopated although not synchronous) "strengthen" their relationship—the more they repeat the action, the stronger the net. Neuronal nets are thus "weighted" statistically. The more often they fire together, the more likely they will do so in the future; they are learning (Hebb 1949, 62). Hebb supposed that the brain was more than its neurons. The brain was an emergent and evolving system. This model is present today in the weighing of neural networks and back-propagation. It is also present in conceptions of neuro-diversity and a possible tool in rethinking and challenging ideas of biological determinism and race in debates over entities like "intelligence."

Markets

These ideas of a self-organising, and perhaps even, evolving, intelligence soon found close bedfellows with economists also concerned with how systems recover from failures.[1] In the preface of his often overlooked, early book "The Sensory Order," Hayek wrote:

> Professor Donald Hebb's Organisation of Behaviour […] contains a theory of sensation which in many respects is similar to the one expounded here; and in view of the much greater technical competence […] as I am concerned more with the general significance of a theory of that kind than with its detail, the two books, I hope, are complementary rather than covering the same ground.
>
> (Hayek 1952, Kindle Edition, 42 of 4601)

Hayek claimed this relation on the grounds that he felt that there might be a different utility of Hebb's theory; not for reprogramming individual psyches, but for modelling emerging self-organising phenomena. Hayek's affinity with Hebb also derived from a belief in the partial nature of knowledge and the place of the market as a cognitive instrument. Perhaps Hayek's personal experiences with the limits of human observation and

decision-making led him to recognise that the new notions of mind might prove a foundation for the neoliberal economic subject.

Moreover, Hayek's vision of psychology directly correlated with his attack on the representability of both social and natural orders, and therefore the argument for the fundamental un-calculability of the future. This resistance to representation in minds and markets made both thought control and economic planning impossible. Such resistance to representation came from Hayek fundamental reconstruction of Hebbian theories:

> It is thus the *process of multiple classification which builds the model*. What we have before called the *'map,'* the semi-permanent apparatus of classification, provides the different *generic elements* from which the models of particular *situations are built*. The term 'map,' which suggests a sort of schematic picture of the environment is thus really somewhat misleading. What the apparatus of classification provides is more a sort of *inventory* of the kind of things of which the world is built up, *a theory* of how the world works *rather than a picture* of it. It would be better described as *a construction set* from which the models of particular situations are built.
>
> (Hayek 1952, Kindle Edition, 2505 of 4601; author's emphasis)

Hayek, by way of Hebb, argued that cognition consists of "maps." These maps were not representations of a territory but more like software or algorithms for construction, "a construction set." These maps were not "pictures" but rather "inventories" and "theories." Therefore, neither brains nor markets were amenable to representation, and arguably, control. By deduction, we might also understand the brain, and perhaps by extension the State, as having largely the function as an archive or a "map" of these apparatuses of classification, or models for construction. This repository is the condition of possibility for maintaining the market, the only function Hayek could imagine for the State, or apparently the human brain.

From this perspective, the Hebbian-inspired physiological account of learning as a process of forging neurological connections explains also why individuals had to be bound together through the population-level institution of the market. Institutions such as markets can manage population scale data and communicate knowledge in efficient ways—that is, only the market can bring together "limited individual fields of vision" and hence enable economic problems to be "solved" (Hayek 1999, 526). The plastic and networked mind was thus the critical figure and analogue to begin the process of creating markets that could be datafied and self-organising but never representable in their completion. The figure of the neural net also linked the market with the mind in a manner that now serves as the very infrastructure for contemporary financialised lives and social networks.

More critically, from our perspective, neoliberal discourse sought to make planning for the future from a centralised site, or from a nation-state,

unthinkable. The liberal subject's incapability of objectivity, and the idea that fundamentally the truth is a matter of networked actors acting in coordinated ways, made ideas of scientific or mathematical prediction of the future suspect. Hayek went so far as to say so,

> [the problem of economics is that of incomplete information] … This character of the fundamental problem has, I am afraid, been obscured rather than illuminated by many of the recent refinements of economic theory, particularly by many of the uses made of mathematics. Though the problem with which I want primarily to deal in this paper is the problem of a rational economic organisation, I shall in its course be led again and again to point to its close connections with certain methodological questions.
>
> (Hayek 1945, 519)

The attack on planning thus came with a fundamental revision of both knowledge and truth, and what the nation-state's function might be. In this case solely the repository of processes or perhaps data for market analysis. This also maintained a revision of normative human subjectivity, that could have been, but was not, activated to question the place of race and sexual reproduction as the foundational structures for state planning.

If we consider that a central role of the nation-states, at least in theory, has been to predict futures through demography and scientific statistical claims over reproduction, then it would appear the abnegation of this function would be a critical challenge to the link between race and sex and the management of futurity, and more importantly the place of practices of demography and data collection over population in deciding futures for states. In saying so, I call on a foundational idea of security and biopolitics for theorists such as Michel Foucault. As Foucault stressed, the concept of population was central to the emergence of biopolitics in the late 18th century, for it denoted a collective body that had its own internal dynamics (of births, deaths, illness, etc.), which were quasi-autonomous in the sense that they could not be commanded or completely prevented by the sovereign, but could nevertheless be subtly altered through biopolitical regulatory techniques and technologies—for example, control over reproductive technologies, incitement of reproduction through benefits, legal and institutional encouragement of heterosexuality (Foucault 2009, 38–44, 62–79; 1988, 25–26, 139–147). However, this abnegation perhaps opened the field to both a critique of science (objectivity is impossible, there is too much data to analyse and find the truth) and, of course, then left the future open to other entities (corporate) whose claims were quite different than the 19th or 20th century Colonial and/or Keynesian state. Central planning may have disappeared as a discourse, but alternatives, such as scenario planning and logistics, have now emerged with force. The organisations and institutions have changed; now being comprised increasingly from a new assemblage of states, private, and corporate actors.

Machines

The market, the infamous neoliberal Milton Friedman famously stated, is an "engine not a camera" (MacKenzie 2006). But if it is an engine, what form of machine would it be? In 1956, a series of computer scientists, psychologists, and related scientists embarked on a new version of cybernetics. In a proposal for a workshop at Dartmouth College in 1955, they labelled this new concept "artificial intelligence." While many of the participants focused on symbolic and linguistic processes, one model focused on the neuron. A psychologist, Frank Rosenblatt proposed that learning, whether in non-human animals, humans, or computers, could be modelled on artificial, cognitive devices that implement the basic architecture of the human brain (Rosenblatt 1962).

In his initial paper detailing the idea for the perceptron that emerged from the 1956 program, surprisingly, Rosenblatt distances himself from his other artificial intelligence forerunners like Warren McCulloch, Marvin Minsky, and Ross Ashby. This separation was grounded in terms of determinism and representation. These scientists had been "chiefly concerned with the question of how such functions as perception and recall might be achieved by a deterministic system of any sort, rather than how this is actually done by the brain" (Rosenblatt 1958, 388). This approach, he argued, was lacking. It fundamentally ignored the question of scale and the emergent properties of biological systems. Rosenblatt, instead, set his hopes in the theory of statistical separability, which he attributed, "the basic philosophical approach *has been heavily influenced by Hebb and Hayek*" (Rosenblatt 1962, 5; author's emphasis).

A central tenet of his approach fundamentally rested on a new conception of perception. One that did not merely imagine nerves as simple relays of information to zones of "processing." Rosenblatt begins his argument by saying it would be easiest to consider memory as comprised of "memory traces" that act like a "photographic negative." Such ideas of memory, storage, and what the nervous system attends to and records, are not sufficient. Rather, grounded in Hebb's work, Rosenblatt favours the idea that perception, "the response represents an 'idea'." This is to say that the perception and the concept or the thought, are part of the same channel (Rosenblatt 1958, 386).

For this reason, the perceptron is a perception-cognition machine grounded in probabilities. Within the model, as with Hebb and Hayek, neurons are mere switches or nodes in a network that classifies cognitive input—intelligence emerges *only* at the level of the population and through the patterns of interaction between neurons. Only through patterns of affiliation does sensory response emerge. The key to learning for the neural net approach was exposure to a "large sample of stimuli," so that those stimuli which "are most 'similar' […] will tend to form pathways to the same sets of responding cells" (Rosenblatt 1962, 388). As Rosenblatt stressed, this meant approaching the nature of learning "in terms of probability theory

rather than symbolic logic" (Rosenblatt 1962, 388). What is key here is that Rosenblatt insists that the combination of neural nets might offer possibilities for learning that individual isolated logic gates/neurons might not. More importantly, in keeping with his model of perception and memory, the networks agglomerate patterns or ideas at the level of groups. The brain does not hold representations or images within it, only learned patterns of associated firing upon certain stimuli. Therefore the model needs to be statistical and symbolic (Rosenblatt 1958, 288–289).

The perceptron model suggests that machine systems might achieve in perception what individual humans could not. Though each human individual is limited to a specific set of external stimuli to which he or she is in fact exposed, a computer perceptron can by contrast, in that it needs training sets, draw on data that are the result of judgements and experiences of not just one individual, but rather large populations of human individuals (Rosenblatt 1962, 19).

I emphasise the notion of evolution and probability in the thoughts of both economists and technologists because both such notions of learning forwarded ideas that systems might change and adapt *non-consciously*. The central feature of these models was that small operations done on parts of a problem might agglomerate as a group into more than their parts, and solve problems not through representation but through action. In this, both Hayek and Rosenblatt take from theories of communication and information, particularly from cybernetics that posit communication in terms of thermodynamics. Systems at different scales are probabilistically related to their parts. Calculating each individual component will not predict the act of the entire system.[2] Therefore, systems cannot be represented or fully predicted. While not truly possible, this contradictory need to evade "representation" continues to fuel our desire for unsupervised learning in nets and the agglomeration of ever larger data sets. The data would, in theory, drive the thought.

Hayek, himself, espoused an imaginary about this data-rich world that could be increasingly calculated without (human) consciousness. He was arguably very fond of quoting Alfred North Whitehead's remark that "it is a profoundly erroneous truism […] that we should cultivate the habit of thinking about what we are doing. The precise opposite is the case. Civilisation advances by extending the number of important operations we can perform without thinking about them" (Moore 2016, 50).[3] The perceptron, widely held to be the forerunner of contemporary deep learning with nets, is the technological manifestation of a more widespread reconfiguration and reorganisation of human subjectivity, physiology, psychology, and economy. And curious and conflicting hope that technical decision-making made at the scale of populations not through governments might ameliorate the danger of populism or the errors of human judgement. The net became an idea and a technique to be able to scale from within the mind to the planetary networks of electronic trading platforms and global

markets. In our present, this embrace of shock has perhaps never been so visibly demonstrated as during the COVID pandemic in the volatilities of the markets.

What I am stressing in making these correlations is how these new ideas about decision-making through populations of neurons reformulated economic, psychological, and computational practices and experimental methods. In doing so, the idea of networked intelligence became the dominant ideology that made machine learning and economic decision-making commensurate and part of the same system.

Ironically, however, the very problems of false patterns, delusions, and noise that threatened the stability of such a self-organising system, were the grounds for an increased demand to introduce more computation into the environment. Rather than safeguarding networks by perhaps fostering different types of systems—the state separated from the economy, or psychology separated from computation—these crises in fact drove for the increased assimilation of more territory into calculation. More data, maybe even noise, was the answer. The less that enters consciousness, the more "operations" that can be made without "thought," the better.

In fact, by 1986, conceptions of the markets increasingly moved from ideals of perfect homeostasis and efficiency, to models of extreme volatility and noisiness. At the height of the introduction of algorithmic trading and derivative instruments to the market, scientist turned financial guru, Fischer Black, one of the creators of the automated derivatives market wrote an important essay on noise.

> The effects of noise on the world, and on our views of the world, are profound. Noise in the sense of a large number of small events is often a causal factor much more powerful than a small number of large events can be. Noise makes trading in financial markets possible, and thus allows us to observe prices for financial assets.
>
> (Black 1986, 529)

His famous article "Noise Trading" formalised a new discourse in finance and posited that we trade and profit from misinformation and information overload. By the 1980s, noise, complexity, and entropy were no longer the figures to battle against, they were factors to bet upon. The overwhelming concern with control over the future through the elimination of entropy that characterised the sciences of communication, command, and control in the 1950s had given way to a new imagination. In this world chance, and noise, were no longer "devils," to cite cybernetician Norbert Wiener, but rather media.[4]

Entropy

The very feature that made such systems evolutionary and emergent, however, was also their terminal point of failure. Neural network researchers and

theoreticians found two remaining and inseparable problems, both related to the integrity of the subject and the residual problem of perception; one concerned excess data and the second adaptability or plasticity. If human brains could be trained, how did human beings maintain their sanity? How did nets know if they are being trained on errors? Or manipulated? In short, inundated with new information all the time, how did systems evade simply dissolving into entropic incoherence? Or, for the human, evade psychosis; understood at the time as the inability to situate the subject in time or space, or to recognise other human beings or things in the environment as separate from the self.

Early in his work, Hebb remarked that the "stability" of learning was sometimes maladjusted to "perception"; that is to say that once a net is trained how does it maintain its training and not constantly change in accordance with new data? This was later labelled the "sensitivity-stability" problem. Systems that were too sensitive to new inputs became unstable and lost stability of "meaning." In other words, they could not pay attention, they suffer, in anachronistic parlance, an attention deficit disorder (Hebb 1949, 15).

Rosenblatt also discovered that errors in weighting might propagate and exacerbate errors, and positive feedback might lead to oscillation and instability; much of the perceptron model is dedicated to correction of errors including through back-propagation (Rosenblatt 1962). Neural network researchers only refracted a broader discourse repeated by cyberneticians, political scientists, social scientists, and economists—what if networked feedback loops fed the wrong positive feedback (for example in nuclear confrontations) leading to network instability (and by proxy social) and even terminal failure (Halpern 2015; Edwards 1997)?

In the post-war period, economists also obsessed about how to avoid the sort of market failures (shocks if we will) that had led to the rise of totalitarian regimes in Europe after the First World War. Within the context of the Cold War, such historical memories of market failure came adjoined with new concerns about the future survival of democratic and capitalist societies (Mehrling 2005, 20; Amadae 2003).

Haunting the entire fantasy of the self-organising and learning system, therefore, was an ongoing problem of decision-making and politics. Were populations sound decision-makers? A history of populist democratic fascism or rabid anti-communism might suggest otherwise. Richard Hofstadter's pathbreaking analysis of Senator McCarthy's anti-communism stands out in this regard. This "paranoid style," he argued at the time, understands the world in terms of patterns of behaviour among different targeted groups, overstating the possibility of prediction and control of the future. In short, too much data might also provide ecological fallacies and false patterns (Hofstadter 1996).

However, such paranoias provoked problems for the concept of the "invisible hand." Economists, like technocrats, had to provide new concepts

of decision-making that might evade the determinism of conspiracy, but still legitimate the purported democracy of the market. As Alfred Moore has noted, while Hayek never directly discussed "conspiracy" and rarely paranoia, the economist played:

> an important yet ambivalent [role] in the development of [anti-conspiratorial] political epistemology. Although he doesn't use the term "conspiracy theory", he sets his entire theoretical project against conceiving complex orders as though they were designed or planned, and he seeks always to show how patterned orders that look like they must have been designed or planned, in fact arose through anonymous and unwitting processes of emergence and evolution.
>
> (Moore 2016, 48)

Hayek's obsession was thus modelling the world as one of self-organising adaptive systems to counter the idea of planned and perfectly controllable political (in his mind totalitarian) orders. The market here takes on the sense of almost divinity, capable of chance and emergence, but never through consciousness or planning. Evolution stands here as against willed action and the reasoned decisions of individual humans. More critically, emerging in the backdrop of civil rights, and calls for racial, sexual, and queer forms of justice and equity, the negation of any state intervention or planning (say affirmative action) takes naturalised form here as an evolutionary necessity. Pro-action in courts or government becomes conspiratorial and regressive; counter adaptation and change. The fundamental question becomes: if there is a pattern, is it the market organising freely, or is it the deep state subverting the interests of freedom? It's impossible to know and it is this impossibility that has been seized by the Right.

Our perceptual present

These historical debates thus have great implications for our present. Hayek argued that the democratic spirit, "a new unwillingness to submit to any rule or necessary the rationale of which man does not understand." As Moore puts it: "This, we might say, is one effect of the expansion of the franchise, and of the Enlightenment demand to submit to authority only when one can make its reasons one's own reasons. A demanding standard" (Moore 2016, 9). And a destructive one for the economy in this formulation. Hayek echoed the fears of many liberals in the post-war period that in complex societies individuals are unable to singularly grasp the reasons why things are happening to them, whether unemployment or bad health, or any other life event. Unable to grasp complexity, perhaps we might say unable to contend with a surfeit of data, or with noisy environments, democratic subjects become psychotic and paranoid, amenable to conspiracy and blame their distress on Others. Hayek had an "environmental conception of conspiracy" (Moore 2016, 52).

It is perhaps irony of history that the answer to this problem of over-inundation and data surplus appeared to be a turn to cybernetics, new models of networked cognition, and ultimately perhaps even a new model of machine learning that might indeed learn from the distributed intelligence of millions, and now billions of people. At the same time, such technologies make it impossible to encounter the very legitimate sources of pain in contemporary societies whether induced by structural racism, poverty, disease or environmental degradation.

This returns us to our present. If Hayek and Hebb are still worried about liberal subjects and objectivity, we might ask what concerns animate our contemporary networks? Shock has been normalised to be managed through our electronic networks. If "shock" for Naomi Klein was a mechanism to destabilise systems and nations to allow the entry of neoliberal governance, we might extend her observation to recognise that now it has become a tool to maintain existing political economy and encourage the growth and proliferation of machine learning networks, psychological self-management, and algorithmic finance. Shock is no longer understood as trauma but rather as self-fashioning, the quantitative self, and wellness.

I opened this essay arguing that in the face of political catastrophe, whether Fascism, Communism, or McCarthyism, the neoliberal and engineering response was to imagine a world of self-organising systems. A world where the future never had to be imagined or planned, thus evading any question of to what or for what anyone might organise or plan. It is also a world where a new nature has emerged as one of the neural nets: This capitalism still relies on a biological underpinning and the neuron is a biological mechanism. Both a material and theoretical concept, the ideal of the market as a machine, is fundamentally based on the re-assertion that markets and ubiquitous computing are "natural" because they model themselves as physiological, and grounded in human brains.

This "natural" which is to say technological neural world is one full of data but also uncertainty. There is a crisis of evidence and objectivity that the Right has now captured to attack the possibility of planning, regulation, or legislation against disease or to defend diversity. On the one hand, the uncertainty over the future of pandemics or the climate crisis becomes a cause to do nothing. There is not enough data to make a decision, the data cannot perfectly predict the future, no one is objective, and therefore if the future cannot be perfectly controlled any effort to do so is flawed and invalid. In this case, certain corporate and government institutions become, to use historian of science Naomi Oreske's parlance, "merchants of doubt." They profit off of the uncertainty inherent in complex systems, and have made this uncertainty an economic and political strategy to legitimate their actions (or lack thereof as it may be).

On the other hand, as public health ethicist Nicholas King has noted, there is a politics of evidence at play in, for example, pandemic responses. In the US, President Trump has made a career of critique of elitism and a

general attack on scientific forms of evidence and evidence-based decision-making. An attack that has been substantiated by decades of neoliberal economic discourse. The uncertainty in this case within scientific forums only facilitates the legitimacy of his critique and allows the Right to transform the catastrophe into a war of ideologies to which Trump answers with authoritarian confidence as the best and most valid voice, while simultaneously invoking the concept that some (read black, female, queer, old, disabled) people should be sacrificed for the economy (King 2020).

If Trump returns to authoritarianism, then we also see a return to divinity and evangelisms. If one cannot plan, and one cannot predict the future statistically, then perhaps one must recuperate historical forms of divination and managing futures? Business historian and theorist, Joshua Ramey, has argued precisely this, saying that neoliberalism "retains its ideological appeal partially due to the way collective *faith* in market forces validates neoliberal ideology as a disavowed form of *divination*" (Ramey 2015, 1). This link to faith is abetted by a history of free market discourse aligned against Communism and Atheism. The technical production of uncertainty as the basis for profit has become an engine to return nostalgic fantasies of both religion and control.

This poses feminists and all of us seeking political representation and diversity with a certain quandary. On the one hand, the very disavowal of the social and the political as the site of deciding futures, to be replaced by technology, has opened the door to reactionary ideologies and the return of heteronormative and racist reproductive orders. Paranoid beliefs in patterns justify nostalgic desires for control by the patriarchy. The ideology of the network thus must be deconstructed and challenged.

On the other hand, the neural net as an ideology *and* a technology has cyborg potentials in Haraway's sense of the term. Value and economy could be possibly unmoored from direct relationships to heterosexual reproduction. Algorithmic and computational finance has histories in European colonialism, but also in other genealogies of machines, logic, and science; ones that reformulate markets around entropy, calculation, and relations *between* agents instead of ontologies. Minds, but also subjects, could be viewed as plastic. And the idea that collectivities might come together to create new worlds and orders could be mobilised. As cultural theorist Randy Martin has argued, rather than separating itself from social processes of production and reproduction, algorithmic finance actually demonstrates the increased inter-relatedness, globalisation, and socialisation of debt and precarity. By tying together disparate actions and objects into a single assembled bundle of reallocated risks to trade, the new market machines make us more indebted to each other. The political and ethical question thus becomes how we might activate this increased indebtedness in new ways, ones that are less amenable to the strict market logics of neoliberal economics (Martin 2014).

Hayek, himself, gestured to this possibility within his own thoughts. Markets, he argued, demand difference, "From the fact that people are very

different it follows that, if we treat them equally, the result must be inequality in their actual position, and that the only way to place them in an equal position would be to treat them differently. Equality before the law and material equality are therefore not only different but are in conflict with each other; and we can achieve either one or the other, but not both at the same time" (Hayek 1960, 150). With these words, he stated the fundamental dilemma of neoliberalism, to be free we must be put in relation to each other. But he also wavers, does liberty denote equal treatment, and therefore a generic law, or differential and situated treatment, which might denote planning or coercion? The response of neoliberal discourse has been to automate this relation thus obscuring its social character, and extract value from the differences between humans while maintaining that such relations emerge evolutionarily and thus are non-intentional but natural and necessary.

Might this discourse be disrupted? Recalling the argument that "difference" is the foundation for "freedom" or "liberty" can we push this neoliberal imaginary until it folds? This tension might be the source of a possible "freedom" through relations if they are historically situated. The fantasy of an archive of processes of differentiation might be mobilised to new ends—mainly to recognise the permeable, political, and situated nature of social orders. The future, I argue, lies in recognising what our machines have finally made visible, what has perhaps always been there, mainly the sociopolitical nature of our seemingly natural thoughts and perceptions. In that all computer systems are programmed, and therefore planned, we are also forced to contend with the intentional and therefore changeable nature of how we both think and perceive our world.

Notes

1 For histories of reason and rationality, as well as the economic decision maker see: Paul Erickson 2013, Foley 2002, Mirowski and Plehwe 2009.
2 For more on the influence of cybernetics and systems theories on producing notions of non-conscious growth and evolution in Hayek's thought: Lewis 2016; Oliva 2016.
3 I am indebted to Moore's excellent discussion for much of the argument surrounding Hayek, democracy, and information. This quote is from Hayek (1945).
4 For an extensive discussion of thermodynamics, stochastic processes, and control see the introduction of Norbert Wiener *Cybernetics; or, Control and Communication in the Animal and the Machine* (New York: M.I.T. Press, 1961); For further discussion also see: Halpern 2005; Wiener 1961; Galison 1994.

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3 I spy, with my little AI

How queer bodies are made dirty for digital technologies to claim cleanness

Nishant Shah

The year 2017 was a pivotal year for conversations around Artificial Intelligence (AI), gender, and sexuality. In their much reviled and heavily criticised experiment at Stanford University, machine learning and data scientists Michal Kosinski and Yilun Wang, trained machine learning algorithms to create a "sexual orientation detector" using 35,326 images from public profiles on a US dating website. They created composite faces, using an aggregate of images from self-identified straight, gay, or lesbian profiles, and claimed that based on this, their algorithm can now detect people's sexuality with "more accuracy than human beings" (Kosinski and Wang 2017).[1]

Their academic article is perhaps less ambitious and suggests that the AI, when compared to a data set of human detectors inferring sexuality by looking at a picture, is 81% of the time more effective at distinguishing between gay and straight men and 74% of the time for women. The media uproar that followed this claim was proportionate, both in the rejection of this claim as well as in warning against the weaponisation of AI technologies to even attempt such an experiment (Vincent 2017). Several authoritative voices spoke out against this experiment and its claims, with activists from gender and sexual advocacy groups as well as scholars from their own disciplines, debunking their experiment, showing the fault lines of their data sampling, revealing the biases of their analysis, and marking the latent queerphobia and heteronormative biases that are present in this research, which received huge attention because of the media that amplified it and the academic institute that housed and supported it (Levin 2017).

The Human Rights Campaign (HRC) and GLAAD immediately labelled this as "junk science" and reminded us that the idea of a "gaydar" and reducing human sexuality to perceived characteristics is both "dangerous and flawed." Ashland Johnson, the director of public education and research at the HRC, said in a statement,

> Stanford should distance itself from such junk science rather than lending its name and credibility to research that is dangerously flawed and leaves

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> the world – and in this case, millions of people's lives – worse and less safe than before.
>
> (Anderson 2017)

Blaise Aguera, Alexander Todorov, and Margaret Mitchell (2018), while still expressing concerns about the ethics of such work, were even more worried about the fundamentally wrong experimental setup as well as the basis for the claims that Kosinski and Wang were making. In their long essay on *Medium*, they warned that the kind of work Kosinski in particular was pushing for, was regurgitating the "junk science of physiognomy (which) has roots going back into antiquity, with practitioners in every era resurrecting beliefs based on prejudice using the new methodology of the age" (ibid. 2018). In their essay, they focus on the science to quickly show that Kosinski and Wang were dishonest in the kind of input they were giving to the AI algorithms, and were wilfully and dangerously blind to the contexts within which our sexuality is both performed and perceived. They conclude that Wang and Kosinski

> [b]elieve that the chief differences between their composite images relate to face shape, arguing that gay men's faces are more 'feminine' (narrow jaws, longer noses, larger foreheads) while lesbian faces are more 'masculine' (larger jaws, shorter noses, smaller foreheads). As with less facial hair on gay men and darker skin on straight men, they suggest that the mechanism is gender-atypical hormonal exposure during development. This echoes a widely discredited 19th century model of heterosexuality, 'sexual inversion'.
>
> (ibid. 2018)

Responding to another non-peer-reviewed study initiated by the Chinese government claiming that they had trained a face-recognition algorithm to predict, with 90% accuracy, whether someone was a convicted criminal, Aguera et al. (2017) had also warned that "developments in artificial intelligence and machine learning have enabled scientific racism to enter a new era," something that they saw being consolidated in the production of the AI Gaydar.

Sarah Myers West, Meredith Whittaker, and Kate Crawford in their considered report on *Discriminating Systems* (2019) show how predictive AI is not just flawed in its predictions but ontologically wrong in its very existence. AI that is modelled around studying physical appearance as a proxy for character is darkly resonant with the history of "race science" and, in particular, "the debunked field of phrenology that sought to derive character traits from skull shape and was invoked by white supremacists in 19th century America."

The basic problem with Kosinski and Wang's experiment is that it did not just build tools that others can now use to do queer detection, but it is also

supported by homophobic assumptions about gender and sexuality. As Sociologist Greggor Mattson (2017), in an exhaustive decoding of both the implied heteronormativity and the sinister intent of this experiment, notes, "what's creepier than Kosinski's flawed algorithmics is his naïve confidence in the moral and political neutrality of science."

Jeremy Howard (2017), with *Fast AI,* perhaps offers the best conclusion to this saga, when he points out that Kosinski and Wang have not necessarily developed a new technology. They have merely exploited the correlation and pattern-detection capacities of highly resourced AI algorithms, trained them on a flawed dataset, and fallen into the cardinal trap of confusing correlation with causation. And yet, the militant insistence on its accuracy and making this set of tools more widely available means that they have empowered queerphobic societies to get on AI-driven queer hunting backed by faulty modelling and analysis. Howard says with resignation, "It is probably reasonably (sic) to assume that many organisations have already completed similar projects, but without publishing them in the academic literature."

A lot of attention and public discourse in the face of these AI-queerness detection problems has been about the ways in which existing homophobia and gendered and sexual violence is being resurrected through these new technological implementations. The critics and advocates have ardently shown us how the scientific principles and the technological deployment are both flawed and need to be heavily reconsidered for the future. These critiques and interventions are valuable, urgent, and need to be celebrated for pushing back against the unholy nexus of heteronormative patriarchy and militarised technologies that seek to persecute the noncanonical bodies and identities with their weaponised AI.

For this chapter, I want to focus on something that seems to not be a part of these conversations, which is the construction of queerness itself, in the growth and expansion of AI-driven systems. I add to this discourse the proposition that the cases like Kosinski and Wang are not just about mobilising, catalysing, or detecting sexuality, but about constructing it in specific tropes that persist long after the initial anxiety about the immediate implementation has faded. I am suggesting that at the heart of the problem here is that AI and queerness are often thought of as separated—one being the site of operation for the other—where they should really be thought of as co-constitutive. I propose that we look at the AI-Queerness relationship not through the teleology of detection or the ambition of preservation, but through the ontology of how each is constructed through the other and how we need to break through this pattern.

Detective AI

There is a long-standing history between queerness and technologies of detecting queerness. Technologies of detection compete with the narratives of "coming out." The agential, empowered, self-identification move that

puts the queer person in control of their narrative and practice, gets replaced by technologies of detection that have been invested in "outing," thus making the person vulnerable and assigning and public gender and sexual identity to a person without their information and certainly without their consent.

The idea that queerness is something that has to be detected and identified is not new. As Gregory Mattson pointed out,

> 19th century measurements of lesbians' clitorises and homosexual men's hips, to late 20th century claims to have discovered 'gay genes', 'gay brains', 'gay ring fingers, 'lesbian ears', and 'gay scalp hair' have all been ways by which historical technologies have been used to dehumanize and persecute sexual minorities under a scientific pretext.
>
> (Mattson 2017)

There has been consistent investment in figuring out a queer person, weaponising technologies to detect, control, monitor, and punish what was considered as deviating from the arbitrary norm of sexual identities of the times. Digital technologies have not been innocent and have long been implicated in structures of outing and detection, often justified by arguments of public health, safety, and care.

One of the most urgent examples of this is in the emergence and recognition of Monkey Pox as a global health concern in 2022. As the world is just recovering from the global lockdowns catalysed by the Covid-19 pandemic, there is obviously increased scrutiny around new patterns of contagion and public health. In the epidemiological reports and studies, it clearly shows that Monkey Pox has a rate of incidence which coincides with "diminishing herd immunity against the *orthopoxvirus* species" (Grant et al. 2020). However, as the virus spreads in different parts of the world where it is not endemic, there is an increasing labelling of this virus as a "gay disease" (Parrilla 2022). While more incidents might be reported in men having sex with men, there is no doubt that this is a universal problem and is spread through close contact, and not necessarily through sexual activity. However, the AI-based targeting on gay dating apps has already started addressing and educating gay men as the potential carriers and as high-risk populations (Caledron 2022). Thus, Grindr, one of the most popular gay dating sites started sending warning messages to queer men in Europe about the dangers of Monkeypox because it "appears to be more prevalent in networks of gay and bisexual men" (Wakefield 2022). AI modelling that identifies queer people is targeting them as high-risk and thus nominating them for early vaccination.

Alexandra Juhasz and Ted Kerr (2014), in their exhaustive analysis of the HIV/AIDS pandemic, call this the "larger media ecology of AIDS," which includes more than just the data and its analysis. The foregrounding of queer people as at-risk also leads to further modelling where the contagion data

primarily focuses on queer sexual practices, leading to a self-contained feedback loop where the queer body is cared for the most, and hence also studied the most, creating automated results that insist that the infection like Monkeypox is necessarily a gay disease, with queer bodies as immediately suspected of being vectors of contagion. Cait McKinney (2022), doing a digital archival history of HIV/AIDS activism, reminds us that "AIDS activists understood and used networked computing, when it was new, as an essential tool for organising and rapidly communicating health information within precarious conditions." However, it is also important to realise that these informational sets, when opened up to machine learning networks, and especially dubious studies like those of Kosinski and Wang, might eventually come up with correlations that it is indeed the homosexuality, which leads to the queer bodies as "dirty" and "contagious." The detecting AI is not trying to detect the queer body, but to detect it as dirty, and reinforce the idea of the dirty queer through this modelling.

The idea of this dirty queer body plays out in many different narratives of social, political, cultural, and technological contamination. Politically, in Russia, when the country was mobilising to ban gay marriages, LGBTQIA+ members using digital dating apps like Tinder were actively harvested of their data, including messages and pictures, which were stored on local servers, leading Tinder to introduce a new feature called "Traveler Alert," that uses their location to warn users when they enter a region where their very presence might be considered a crime (Locker 2019). Similarly, the easy peer-2-peer connectivity and algorithmic matching offered by gay dating apps has led to an increased number of "gay hunters" (Fitzsimons 2019), which allow people to pose as queer on certain websites, match with prospective dates, and then crowdsource them on "a website that encourages to 'hunt' LGBTQ activists, inspired by the torture-themed film 'Saw'" (ibid.).

Socially, we see reports of how AI is trained on specific data sets of sex offence registries in the US, to come up with automated labels for young queer people as "deviant" (Wahl and Pittman, 2016). Queer people are driven towards self-harm and often caught in a filter bubble of depressive information on algorithms that keep them trapped there to increase profits and engagements. Culturally, the recent whistle-blowing testimony of Frances Haugen to the US Senate clearly demonstrates that young women and queer people were directed towards self-harm and depression on platforms like Facebook and Instagram (Haugen 2021) and this is amplified by algorithms which tagged them as queer and started pushing them towards specific kinds of behaviours (Leufer 2021). Technologically, we saw how the popular car-sharing taxi service Uber, rolled out a Real-Time ID Check that uses facial recognition systems which immediately locked out trans drivers (Urbi 2018), because the system was not capable of recognising and managing transitioning faces (Brammer 2018). Sasha Konstanza-Chock's brilliant thesis on "Design Justice" (2018) has already shown how AI-driven models of gender and sexual normativity target and punish trans-people going

through the security devices on airports, subjecting them to greater scrutiny and harassment because their bodies are identified as atypical or "deviant."

This list is more symptomatic than exhaustive, more exhausting than inspiring. It does, however, establish my basic argument, that there has been a continued reproduction of the queer body as dirty, and that the detecting technologies have always focused on identifying, not just the queer body, but its particular strain of dirt (as an attribute or an explanation for its practices) which can be further managed, exploited, or weaponised. My proposition is that Detective AI is not really just about outing queer people or even trying to protect them by identifying them as high-risk. Instead, we need to read them as deeply complicit in the construction of queerness as contaminated and unclean, and they do that in order to present themselves as clean and robust, thus refuting the increased scrutiny of how they are leaking, hacking, and sharing information and data about the users, without their consent, in a web of unethical practices.

Clean AI

One of the keenest promises and biggest myths of digital technologies is cleanliness. There is a continued insistence of how digital systems are clean, reliable, and designed to avoid unwanted contamination. Particularly with AI, which is also seen as an evolution of legacy digital systems of computational networks, the rhetoric is prominent. In e-governance, where AI-driven systems are seen as the epitome of the SMART (Simple, Moral, Accountable, Responsible, Transparent) principles, we encounter the idea of AI as incorruptible and hence able to manage and control the corruption in our messy social structures. In our work monitoring and comparing the AI and governance landscape in India and Japan, we have seen both the countries develop national AI strategies. Elonnai Hickock and Vincent Zhong point out that

> In 2019, Japan published the Integrated Innovation Strategy Promotion Council and adopted the seven Social Principles of Human-centric AI and the 10 R&D and Utilization Principles of AI for developers. In 2021, Niti Aayog, the public policy think tank of the Government of India, published a set of six 'Responsible AI' principles to guide the development of AI ecosystems in the country.
>
> (Hickock and Zhong 2022)

They quote from Niti Aayog's paper to see how these AI principles are expected "to be grounded on the nation's accepted value systems and compatible with international standards," while the Japanese research suggests that "we should respect the following three values (dignity, diversity and inclusion and sustainability) as our philosophy and build a society that pursues their realization" (ibid.). However, there are two key tropes worth

noting here. Both the frameworks very clearly accept the existing norms and values as the ones that will be used to measure the work and development of AI.

The goals are presented as technology-neutral, as if the existing or future technologies are not already shaping and shaped by these values. Additionally, while AI is meant to be informed by these human values, it is also clear that the role of AI is, in fact, to measure these social values. Thus, in a country like India, where positive gay rights are still absent, the good governance AI is not going to be deployed to further the rights of queer people but will in fact be used to maintain the status quo. The insistence on contextually appropriate ethical frameworks means that the ethics that form the context for the emergence of these AI are already seen as normative, and the role of AI in governance is to ensure that these get maintained and enforced, because AI is seen outside this fold, and hence better positioned to override the human messiness in these contexts. As Chinmayi Arun (2019) explains in her evaluation of harms, discriminations, and exclusions that emerge out of bad data design, AI is only as good as the data set that it is trained on. She writes,

> The very design of data sets can be biassed as a result of assumptions and gaps. The datasets could under-represent or wrongly represent certain populations, leading to discrimination against them or to their exclusion. Even if the dataset is accurate, its structure can end up discriminating and marginalising people; the classic example being datasets that code people as either male of female, erasing other forms of gender identity.
>
> (Arun 2019, 10)

Following Arun's argument, it is clear that while the development and intention of AI might be aligned to these human-centric, AI for social good principles, the presentation of AI as free from the existing biases and prejudices is futile. As Kate Crawford and Jason Schultz (2019) point out, this separation of AI from the context of its operation is a strawman argument that presents AI as clean and good, and capable of correcting the corruption and mal intention of the human actors.

In technological settings, either with the global alliance in AI or with one of the largest AI for Social Good projects pioneered by Google, these problems remain fraught. Timnit Gebru, one of the co-lead of Google's ethical AI team, announced in 2020 that she was being forced out of her job. Karen Hao (2020) reports that Gebru, who had already authored a path-breaking paper that showed that machine learning facial recognition is less accurate at identifying women and people of colour, had come up with another paper that was being silenced by the head of Google AI. Gebru's collaboratively researched draft paper, which eventually got leaked online argues that large language models that are trained on exponentially increasing amounts of text from the internet are at risk of amplifying racist,

sexist, and otherwise abusive language (Simonite 2020). While this in itself is not new, they show that these AI, trained on older text models, would be unable to account for, accommodate, or operationalise new languages, vocabularies, and expressions of diverse communities, and will always treat them as deviations. Thus, anti-sexist, anti-racist, and trans-positive languages which play with pronouns, new identities, and forms of solidarity will automatically be considered as "wrong" by these AI, which will then take it as an example of some communities perpetually being wrong and in need of correction.

The affirmation of cleanliness is both an exercise of control and a blackboxing of technologies, despite the fact that we witness how computational technologies are ontologically and manifestly produced through multiple layers of contamination. A cursory look at algorithmic governance practices opens up a field of intentionality, bias, encoded discrimination, and amplified filtering that lead to the production of harm and violence without accountability and restitution (Chiu 2018). The obsolescence of databases, leap-frogging of technologies, and continued breaches and leaks of data and information belie the idea of immortal data and indeed present data and information infrastructure as fragile and prone to breakdown and manipulations. Especially in the world of self-learning algorithms and networks of correlation, we see our reliance on unexpected, undesigned, and unplanned-for variable queering models, producing states of exception, and leading to designed deviance which can neither be planned nor controlled.

Cleanliness, then, is neither an attribute nor a condition of digital networks and their spaces. The foregrounding of cleanliness has to be seen as an attempt to clean bodies, information, data sets, and approaches that threaten the power, destabilise the status quo, and resist the benign narrative of computation that is being naturalised in our everyday practices of digitisation. Cleanliness has to be recognised as an active way by which resistant data and technology usage—queer data and usage—can be controlled, punished, and penalised in order for dominant narratives to be favoured.

The detective AI technologies, based on their predictive models, present a certain narrative of cleanliness to create the dominant aesthetic of our computational times that reinforces this filtered, curated, cleaned digitality as the de facto mode of visualising and engaging with the digital. The construction of the dirty queer has to be seen in conjunction with this presentation of clean AI (Nenad et al. 2021). The conversation and the coconstitution of queerness as dirty and AI as clean is deeply intertwined, to an extent where we could argue that for AI to be clean, queerness will have to be dirty, and that the modelling and deployment of AI exploits the terrain of queer bodies, voices, practices, and phenomena to reinforce itself as clean in the face of undeniable data that these technologies are messy, leaky, and violently militant in their everyday practice.

Queering AI

The continued reproduction of cleanliness and dirtiness, as attributes of AI and queerness respectively, seems to be inescapable. The rhetoric of AI development as necessarily improving the human condition, but particularly removing the "unwanted" or "undesirable" structures of contamination and corruption, inevitably frames queerness as a site of detection, management, containment, and punishment, thus falling in a long legacy of technological refusal to recognise it as a legitimate subculture of lifestyle, and measuring it always as an aberration (Halperin 2014). Even when AI-driven implementations are geared towards developing queer alternatives and intentions, the ontological presumption of detection and removal, at the level of training data sets, correlative algorithms, and networks of circulation remains unmoved, thus reinforcing the idea that the logic of AI is unquestionable.

Queering AI, then, cannot be merely about increasing the diversity of training data (Caliskan 2021), or curating algorithms towards inclusive networking, or putting checks and balances on computational networks in order to keep people safe (Nenad et al. 2021). While all of these are important, they are more post-facto implementations that are more oriented towards reduction of harm and diminishing the violence against Queer bodies that is structurally built into AI platforms and practices (Johnson 2021). A correction of AI's deployment and intention (Hao 2019) is perhaps as futile as trying to de-weaponise a gun, because it reinforces that the way in which AI is being designed and coded is fine, and the only problem is with its implementation and structures of power who wield it (Katyal and Jung 2021).

Instead, queering AI, I propose, is to change some fundamental ways by which we can recalibrate the very computational materiality and digital deployment of AI by changing the parameters through which it weaponises information against queer and other intersectional underserved communities. I have three speculative and material propositions which not only break away from the clean-dirty narrative deadlock but also puts forward demands and challenges of abandoning some of the most problematic practices of AI development and deployment in order to actually serve the needs of queer life and sociality. While these propositions are by no means exhaustive, they do offer an approach of how we might take fundamental building blocks of AI and queer them in order to create AI systems that are in their very nature aligned to queer inclusivity and safety.

Queering the node: The collective as the origin of information

At the heart of digital computation is the construction of nodes in a network. Nodes do not have a linear, comprehensive, origin story where it pre-exists the network and intention of information circulation. The Barabasi-Albert model (Barabasi 2015) of understanding scale-free networks in computational systems proposes a system that works on the ideas of growth and preferential attachment. Both of these ideas work on the concept of a node.

In their model, the node does not have a value or an origin of its own but it accrues value through connecting with other nodes. In their preferential attachment theory, they argue that the more a node is connected, the more likely it is to receive new links. Dubbed in social theory as the Matthew Effect (Rigney 2010): "the rich get richer," this preferential node analysis of contemporary social media networks proposes a radical breakthrough in understanding the impulses of AI deployment.

Most AI work with this preferential attachment theory for their growth, establishing a positive feedback cycle between the node that is already in power and those who link back to it. Which means that AI networks have a clear idea of independent, discrete, and isolated nodes which will be favoured both in terms of amplification of their information as well as in growing their circulation in the favour of smaller, dissident, or less connected nodes. Scale-free AI networks thus insist that the value of information and its spread is proportional to the discrete and individual sources of information. It traces information, through all its social media spread, back only to its "origin sources," thus creating a hierarchy of which node will be preferred in a space of conflict.

This temporal quality, where new nodes are added to a network only one at a time, and reverse engineering collective information to individual nodes, is one of the most definitive ways by which dissident, dissonant, or critical nodes are either removed from the network or devalued in favour of the "origin source" which is seen as the most connected and hence the most authoritative source in the system.

My first proposition for queering AI is to reject this model as the only viable one. While this model is a description of what happens in scale-free networks that are aimed for infinite growth, it doesn't have to be the default model of all AI. In fact, replacing scale with intensity—thus measuring the affective and the emotional experience of being connected—might lead to a new kind of AI which makes space for treating nodes not only as equal but collective.

The idea of making nodes not replaceable but coherent, and continually bleeding into each other, allows for a space of safety, anonymity, and dissidence, without persecution or being dropped out of a network. It resists the kind of experiments of detection which continue to make queerness an individual attribute and uses information shaped by more influential nodes to isolate and target individuals. Instead, it allows for a collective queer spectrum to emerge which will concentrate more on the co-creation of dynamic datasets. These will be valued through their collective origin rather than their connected spread—information becomes more valuable because multiple nodes create it, rather than being valued because multiple nodes circulate it.

Leaning into fragmentation and omission

The algorithmic violence of detection depends upon the premise of intelligibility. Digital intelligibility, which is, as Wendy Chun (2011) points out, a function of storage rather than memory, essentially means that the individual

user is mined for data to create composite and discrete images and profiles for pattern recognition and eventual discrimination. The standard response to discriminatory AI has been to give it more information, expand its data sets, and allow for more people to interact with it. However, if the presumption that the AI can and will know everything about us is not shaken, then that AI eventually is going to enter into negotiations of harm (Biernesser et al. 2020) and the cruel algebra of survival, when it comes to decision-making.

Recognising that the biggest role of AI—predictive, detective or otherwise—is in decision-making helps us understand that giving excessive data to AI is not going to resolve the problems. In fact, this was one of the core recommendations from the research team led by Timnit Gebru, where they argued that increasingly we are dealing with large models that defy description and documentation because they are too large to be described—just like a true scaled map of the world would be too large to be accommodated in the world as we know it—and this is leading to potentials for invasive AI manipulations and deployment.

The fundamental problem about "not enough data" in the context of discriminatory AI is that it puts the onus of producing clean, robust, comprehensive data on the individual, at the same time divesting the human user of powers of negotiating and shaping the data. As queer artist Zach Blas suggests in his extraordinary performance that designed the "Fag Facial Recognition Mask" (2014), the biggest resistance to AI is not more data, but obfuscation and production of data that challenges the AI way of seeing things. Blas recommends that data be produced in a relationship of "concealment and imperceptibility" (ibid.), allowing for and naturalising data sets of emptiness, where the emptiness is not seen as a lack but as a resistance to the detection-driven violence it instigates.

The lack of data disrupts the narrative of data reconciliation that produces discrete subjectivities that can be isolated, tracked, managed, and controlled. Within self-learning AI systems, the mechanics of hyperlinking perform causality or synthesis between two disparate objects within the computational networks. When AI algorithms encounter absence or illegible data, they make the decision to either link with a more legible or more viral data set, or set up a process of extreme scrutiny on the subject to mine their data to exhaustion. Naturalising fragmentation and omission, and calling for an AI to stop its decision-making when faced with an empty data set is one way by which the detection and contamination arguments can be stopped.

Moving from fidelity to promiscuity

AI models continue to be persistent in their narrative of contamination by aligning themselves to principles of fidelity, both in aesthetics and in computation. An AI model is presented as the most uncorrupted description of the reality that it is modelling. Based on principles of probability and making transparent the information that it is being shaped on, an AI model will

always be nothing more than the data it parses and the network of relationships that is produced by the parsing of that data. An AI system, then, can never lie, because it doesn't produce anything more than an aggregation of legible information and a decision based on the parameters set for resolving a crisis. AI models work and persist, despite their flaws, because their standard of "cleanliness" or dependability is fidelity.

It is undeniable that AI models have near-perfect fidelity to the dataset that it is trained on and works upon. As a self-contained, logical, discrete system, there is very little information or data in that system that can be considered as unmapped, ambiguous, or difficult to understand. Even when the data is flawed, or the information is wrong, the informationality itself is clean and clear. Thus, AI systems might leak data, take wrong decisions, perpetuate violence, amplify discrimination, and make decisions that are flawed in real life, but are still perfect when measured in terms of fidelity. It is this adherence to fidelity, that allows for these systems to punish promiscuity and frame all ambiguity as promiscuous.

In this equation, human realities are already messy, but the technological fear of promiscuity double binds queerness which is also often in contradiction to the heteronormative structures of clearly defined genders, relationships, and sociality. Queerness can sometimes be seen as a celebration of promiscuity—not just a sexual polyamory but a production of kinship, networks, communities, and connections that transcend the traditional structures of marriage, family, and inheritance, which are often violent and exclusionary of queer folk. The insistence that queerness now be constructed on structures of fidelity and be considered as dirty if it does not follow the clearly defined boxes of gender, sexuality, and togetherness (Albert and Delano 2021), emphasises the narrative that Queerness is something that has to be managed by AI systems which, with all their problems, retain high and wireless fidelity to the clean taxonomy of their data sets.

Producing AI which is promiscuous in nature—allowing for variable and forgetful data, neurotic and irrational algorithms, and producing connections which are not descriptions of the present but proposals for the future—makes way for a different kind of AI that supports queerness as a desirable state of being. Instead of modelling queerness for detection and cleaning, we can infiltrate AI systems to make queerness its ontology, and letting go of the control and punish power structures that underlie contemporary AI development (Wareham 2021). The idea of promiscuous AI also makes our bodies joyfully contaminated by desires, aspirations, longing, and belonging, not as a rejection of computational networks but as a deep embrace of it. In this we realise that the new bodies that are being constructed—through regimes of computation and lifestyle, through disciplines of labour and valuation—can be more free and experimental.

This sets up a process where we are not looking at queerness and AI as contradictory, but as reconstitutive, using the intersections of the digital and the human to reconsider how future queer AI can be developed and produced.

Contaminatedly, yours—Or why this is a non-dictionary word that will still be used in this title

It is the ambition of this essay, to present contamination or dirtiness, which is often constructed as a queer attribute that can then be resolved by clean and discrete AI technologies, as an ontology for queering AI, to both exploit and expand upon the processes of co-constitution and co-contamination to think through the nature of evidence, historicity, personhood, and embodiment. The attempt is to overturn the idea of the digital as clean and the queer body as contaminated or something that needs to be detected and sanitised.

In evaluating the detective, predictive models of AI and their operations on queerness, I show that our responses cannot merely be correction and improvement, but a recognition that queerness is needed to be dirty for AI technologies to model and present themselves as clean and dependable. Through this chapter, I have argued that we need to see contamination of queer, by queer, through queerness, as deployed in the weaponised AI practices, as a pre-requisite for the technology itself to sustain its hold and power despite the multiple flaws in its own unfolding.

I offer that a part of our queering of AI is not just to give queer data and algorithms to existing AI structures, which will only use this information to create a larger expanse of discriminatory and exploitative models. We move beyond the "better data" rhetoric and start examining the ways in which AI logics and mechanics can be deployed for human needs, offering intensity rather than scale, as the parameter, thus overturning the idea of AI as the measure of queerness, and instead establishing queerness as the lens through which AI can be developed. Instead, our attempts at queering AI have to be an ontological reworking of some of its computational and discursive practices and definitions, intentions and ambitions, and in the process, create the challenges and opportunities of making queerness as a source for joyful expansion rather than shrinking detection. In this, we depathologise queerness from AI modelling systems, and make way for new celebrations of collective, fragmented, and promiscuous AI systems that can harness the potential of queerness to create kinships and collectivities that contaminate the gentrified digital futures with joyful possibility.

Note

1 The pre-print version was published online in 2017 at https://psyarxiv.com/hv28a/. Most of the responses are to that paper and hence that is the cited date. The article was published with minimal changes in the *Journal of Personality and Social Psychology* in 2018. The reference notes that subsequent responses have addressed that.

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Part II

Materialities

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4 We're all cyborgs now?

Cripping the smart cyborg

Ute Kalender

Harper

"Stop it with artificial intelligence! What do you always want with artificial intelligence?!" Harper is annoyed.[1] We are sitting in my friend's living room. And I am thinking out loud about artificial intelligence (AI), about how technology might or might not make our everyday lives easier. The night before, I had seen Ex Machina (2015), a US-American science fiction film in which the queer lipstick AI[2] Ava teams up with Kyoko, another lipstick AI, against their creators, tormentors, and admirers, and kills them.

Actually, Harper and I wanted to prepare our team teaching seminar, but instead, we sifted through documents from her health insurance company for hours. My friend is in a dispute with the carrier: The company refuses to finance a new power wheelchair with a lift function. Harper would be able to visit public restrooms without asking others for assistance. The machine would also give her better access to high changing tables. Harper is five months pregnant, although she has been told that pregnancy is nearly impossible for her. But only nearly. Harper was unwavering in her desire to have her own child—to have her own *biological* child. Also, now during the wheelchair affair, Harper is unwavering. "I need a wheelchair, not an AI," my friend declares, and goes on sarcastically: "My insurer won't pay for a new wheelchair, but they would take over the costs for an AI or a new smart apartment. Sure." Harper has no other funding options for the chair. Her girlfriend has an MA in applied cultural studies and works for little money in disability assistance. And her wealthy Californian mother will not support her either. When Harper decided to move to Berlin, her mother, deeply offended, broke off contact. Her daughter had become her life's project. "Regretting motherhood," Harper comments dryly at times.

Narrative prosthesis

Harper's petulance towards my AI fabulations also stems from the gap between common discourses on AI and the life realities of many persons with disabilities: While companies, research, or science fiction like to draw on images of persons with disabilities to capture AI, even to normalise it socially, these

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images have little to do with the everyday lives of many persons with disabilities (Jack 2014; Ng 2017; Whittaker et al. 2019; Smith and Smith 2021). For example, in a podcast of the Heinrich Böll Foundation,[3] the senior researcher at the German Research Centre for Artificial Intelligence, Aljoscha Burchardt, describes the technology in the following terms:

> But in the end, the system is, let's say, completely stupid. […] But it can translate red into rouge […] it can just do it. So that means it's a completely interesting technical idiot. An autistic system, which masters this one thing perfectly.
>
> (Burchardt 2018, 6:30)[4]

Similarly, in one scene of Ex Machina, the protagonist, Caleb, a shy programmer, explains Ava's beguiling power by describing the AI as "complicated in a discrete way"—or as he further develops: "Somehow non-autistic."

Burchardt frames AI as autism, presumably to sound provocative, perhaps also to allay the podcast listeners' fears of the oft-invoked superiority of AI. In Ex Machina, however, the reference to autism adds depth and intensity to a heteronormative fascination script: Caleb falls in love with the cyborg Ava because she acts like a pleasantly difficult woman, like a normal woman who is a little uncontrollable and irritating, but just not "really" cognitively or emotionally damaged. Ava simply is not disabled. Burchardt's and Caleb's narratives unite the self-evident recourse to the image of autism. The invocation of autism becomes a "narrative prosthesis" (Mitchell and Snyder 2000), a problematic way of talking about the socially virulent phenomenon of AI in a "generally understandable" way. The cultural scientists David Mitchell and Sharon Snyder understand a narrative prosthesis as a powerful, discursive auxiliary instrument. They write:

> Disability pervades literary narrative, first, as a stock feature of characterization and, second, as an opportunistic metaphorical device. We term this perpetual discursive dependency upon *narrative prosthesis*. Disability leads a distinctive idiosyncrasy to any character that differentiates the character from the anonymous background of the "norm."
>
> (Mitchell and Snyder 2000, 47)

If, for example, a film or a novel uses a disability to describe a character, this reference usually[5] gives the character something special. The disability turns the character as well as the cultural product into something dazzling because both stand out from the broad, normal masses. Normality, as we know, is not worth talking about and is considered boring.

Furthermore, Mitchell and Snyder state:

> Our term *narrative prosthesis* is meant to indicate that disability has been used throughout history as a crutch upon which literary narratives lean

> for their representational power, disruptive potentiality, and analytical insight.
>
> (Mitchell and Snyder 2000, 49)

Hence, it is not surprising that Burchardt, above, does not depict AI as an average, slightly boring, and unexcited person. Nor does Caleb describe Ava as a female being who reminds him of a quiet, shy woman who he could properly read from the first moment of their encounter. Such characters would not evoke narrative power: They would not arouse intense feelings or moments of witty insights in readers, listeners, or viewers of AI stories.

Mitchell and Snyder also use the term narrative prosthesis to point to a simultaneous omnipresence and absence that people with disabilities have in cultural products. Unlike other discriminated groups, people with disabilities are not entirely ignored, tabooed, or blanked out in cultural products. They have been quite present in art, literature, and film for a long time. At the same time, people with disabilities are absent because they do not stand for themselves in their multiplicity, but for something else. They give meaning, intelligibility, and form to other characters, storylines, and ethical-moral norms: In the comedy As Good as It Gets, the character of the severely wounded gay artist Simon Bishop helps the heterosexual couple Melvin Udall and Carol Connelly to a romantic happy ending. Another example is the supporting character of the dissociated Savannah in the drama Lord of the Tides. Her suicide attempt makes her brother move to New York for a few months. That also gives him a temporary break from his deadlocked marriage in a smaller town. By the end of the film, the brother then, mindful, purified, and emotionally healed, returns to his wife.

All cyborgs now?

Because of such negations of the complexity of disabled lives, characters, and desires, Harper, who was introduced at the beginning of this article, has little left for a cliched embrace—in the sense of a unifying description—such as "We are all cyborgs." Harper often hears this statement from academic and activist friends, who in turn like to refer to Donna Haraway. In her cyborg manifesto in 1991, which has since become a feminist classic, the science theorist establishes that "we are all chimeras, theorised and fabricated hybrids of machine and organism; in short, we are cyborgs. Cyborgs are our ontology" (Haraway 1995, 34). Cyborgs, Haraway insists, have recently become part of our everyday technological lives and are no longer mere fantasy subjects. She thus enters into a critical correspondence with feminisms that propagate a pure body untouched by technologies, that negate that all humans are interwoven with nonhuman entities, and that prefer to persist in a nostalgic return to a pre-technological time instead of acknowledging this interwovenness and instead of trying to actively and ethically co-create it.

People with disabilities recur in Haraway's work on the cyborg. In the manifesto, she suggests that "paralysed and other severely disabled people may have (and sometimes do have) the most intense experiences of complex hybridisation with other communication devices" (Haraway 1995, 67). Disability studies researchers have since made frequent reference to this phrase (cf. Kafer 2009). And they give Haraway credit for being one of the few gender scholars who took disability into account and thus initiated a focus on the category in intersectional gender theories (Kafer 2013, 105). At the same time, these authors have comprehensively demonstrated that, if closely read, the science fiction novels appreciated by Haraway portray disability in a negative way. And moreover that the cyborg figure is itself problematic because it idealises the relationship of people with disabilities to technologies and focuses too strongly on the active. The cyborg cannot help but has a positive relationship to prostheses and always already demonstrates a desire for prosthetic transgression of boundaries—for the sexy appropriation, innovative-ironic extension of, and joyful fusion with technologies. The foil of the Harawayian cyborg, as Tobin Siebers makes clear, is basically the non-disabled human:

> Haraway's cyborgs are spunky, irreverent, and sexy; they accept with glee the ability to transgress old boundaries between machine and animal, male and female, and mind and body. […] [However] Haraway is so preoccupied with power and ability that she forgets what disability is. Prostheses always increase the cyborg's abilities; they are a source only of new powers, never of problems. The cyborg is always more than human – and never risks to be seen as subhuman. To put it simply, the cyborg is not disabled.
>
> (Siebers 2008, 63)

Contemporary feminist digital manifestos

This critique also applies to current cyberfeminisms such as glitch feminism or xenofeminism (Laboria Cuboniks 2015; Hester 2018; Russel 2021). Widely received in feminist art and theory, these manifests form two crucial stakes for radical feminist digital politics. Donna Haraway's work, along with other big names such as Paul B. Preciado, forms a key reference point and all the texts teem with mistakes and failures, mutations and monsters, afflictions and sclerosis, anti-bodies, viruses, and the viral. As the collective Laboria Cuboniks puts it in the Xenofeminist Manifesto, "XF mutates, navigates, and probes every horizon" (Laboria Cuboniks 2015, 0X01). And art theorist and digital artist Legacy Russel writes in her Glitch Feminism Manifesto, which the New York Times named one of the best art books of the year in 2020:

> What Glitch Feminism is proposing here is this: maybe we want rupture, we want to fail. We strive for leaky, challenging bodies full of fissures and seams. We want wild, sensual, monstrous bodies.
>
> (Russel 2021, 102)

Without a doubt, glitch feminism and xenofeminism strive for a queering of concepts of the monstrous and want to show that the monstrous as part of queer bodies is also inscribed with resistance (cf. Klipphahn in this volume). Nevertheless, these cyberfeminisms choose quite a few appellations that people with disabilities know all too well from their everyday lives—which tend to have the status of violent invocations and real threats in their life-worlds. In short, embodied, everyday knowledge of people with disabilities as well as nuanced insights from disability studies forms a gap in Haraway's cyborg figures. Disability, in old and new cyberfeminisms, once again becomes a narrative prosthesis which equips these manifestos with narrative force and intersectional urgency.

Manifestos also derive this narrative force and intersectional urgency from their specific textual form. They are texts that, in contrast to many academic texts, reject the claim of nuanced, subtle, mindful, or thoughtful speech. Thinking processes are meant to materialise directly rather than subsequently, which is why manifestos can also be understood as bodily processes (Dieckmann 2020). When I read the texts with students, such bodily processes manifest themselves, for example, in an oscillation between laughter and paralysed silence. The laughter might result from the unusual dramatic terms, the silence from the overwhelming density, speed, and the unwillingness to clarify concepts.

On the one hand, the manifestos incorporate images of disability and physical defects into the texts as a matter of course. Mutations, sclerosis, or viral denote a kind of textual normality and dramaticness. On the other hand, while reading, uncomfortable irritations and feelings of uneasiness arise. When Legacy Russel titles a chapter "antibody" or Xenofeminists propagate "a proactive politics for biotechnical intervention" (Laboria, 2015, 0X16), it reminds me of neo-eugenic rhetorics and of problematic claims to enhance and overcome the bodies of "the weak." In other words, manifestos derive their power precisely from the fact that they are an appellative, immediate, affective, and affecting form of knowledge. They are themselves somatic speculative practices that incorporate other texts into their own textual bodies like chemical substances (Dieckmann 2020). And precisely because such manifestos are body theories of technology that not only describe technologies but also embody them, we must ask whose body knowledge, body images, and body narratives are used to construct the textual body of manifestos.

Data extractivism

Moreover, what connects the old and new cyberfeminisms with companies like Microsoft is the appropriation of the knowledge of people with disabilities for purposes other than their own, as a narrative prosthesis, perhaps also following the logics of data extractivism. I think this as I walk to an Italian restaurant to pick up roasted artichokes, tuna carpaccio, and Capri

Spritz for Harper and me. By data extractivism, post-Marxist media scholars like Nick Couldry and Ulises A. Mejias mean the collection of all lives, bodies, and behaviours through sensor media and its constitution as digital data. The data then forms the basis for companies like Microsoft to build new technologies: New technologies like AI, which in turn are fed into pro-profit products (Couldry and Mejias 2018, 2). Just that morning, I had read the following on a Microsoft News Center website:

> Artificial intelligence […] can greatly facilitate inclusion, i.e. the participation of people with disabilities or serious illnesses in everyday life. To ensure that people are not excluded, relevant data in sufficient quantities is required for the various models. This is exactly where the problem lies, which is why Microsoft is involved in various projects worldwide.
>
> (Microsoft News Centre 2021)

The collection of as much data as possible from people with disabilities is therefore justified here as inclusion, although it is unclear whether this group needs such products at all or whether the devices are even affordable for them.

But what about my own texts? Don't they also extract a lot of data—as many experiences, impressions, and stories as possible from disabled friends, influencers, and talk show stars—in order to then process them into publishable texts? Such contributions may not immediately generate large monetary values, but they enable me to do all kinds of pleasant things in the long term. Some of my non-disabled friends are eager to emphasise that we will all become disabled at some point in our lives if we only live long enough. They excessively muse about their back pain, exhaustion, and melancholy vis-à-vis their disabled acquaintances. I do understand my friends' motivations, but find this kind of talk often inappropriate, sometimes enervating: Am I unable to deal with weakness in my friends? Am I negating my own fragility? Robert McRuer makes a clever distinction between "virtually disabled" and "critically disabled" in his texts (McRuer 2002, 95). Everyone, McRuer argues, is virtually or quasi-disabled because no one succeeds in fully embodying the norms of non-disability at any time in their lives. Everyone fails sooner or later to meet the imperatives of fitness, performance, and health. But more important than acknowledging this failure is, it seems to McRuer, that we become "critically disabled" and that we turn political. Becoming "critically disabled" goes beyond being "virtually disabled" because it means fighting to change institutional, material, knowledge, and legal conditions and also structural access to equal rights and economic resources, and maybe to keep silent about sensitivities.

Denaturalisations

Harper usually pulls her shoulders up in boredom when the subject "critical self-reflection" comes up. Occasionally, she briefly chokes off a flood of my

confessions of privileges with the flattering yet tacky term "ally." Perhaps a person with a passionate interest in feminist theory, a fascination with algorithms in dating apps, and similar tastes in music is sometimes closer to her than the experiences of other women in wheelchairs. She doesn't mind finding her name in my writings, sometimes she even finds it a pity when her character is fictionalised. And this evening, Harper also prefers to return to the new digital manifestos, which would make her uncomfortable. The reason is the impetus of aggressive denaturalisation. It is queer and disabled people, she says, whom xenofeminism seeks to liberate from the burden of naturalisation. Harper reads aloud:

> Anyone who's been deemed "unnatural" in the face of reigning biological norms, anyone who's experienced injustices wrought in the name of natural order, will realize that the glorification of "nature" has nothing to offer us – the queer and trans among us, the differently-abled, as well as those who have suffered discrimination due to pregnancy or duties connected to child-rearing. XF is vehemently anti-naturalist. Essentialist naturalism reeks of theology – the sooner it is exorcised, the better.
>
> (Laboria Cuboniks 2015, 0X01)

Harper repeatedly makes clear in conversations that calls for denaturalisation are not desirable per se for people with disabilities, can have an uncomfortable normative tone, and can even have negative effects. For example, denaturalisation in xenofeminism again takes Donna Haraway as a starting point and means "make kin, not babies" (c.f. Hester 2018a). The slogan is a plea for care, community, and intimacy beyond biological parenthood, heteronormative ties, and nuclear family. Of course, family arrangements that are no longer based on heteronormative, biological reproduction can be attractive to people with disabilities in particular. Similar to queer and trans people, they might have experienced estrangement, exclusion, and violence in their families. And some people with disabilities cannot and do not want to have children. However, particularly women with disabilities have often made the experience of being denied biological motherhood and instead being encouraged to have abortions (Walgenbach 2012, 30–31). Swantje Köbsell describes the situation of disabled women in the 1980s as follows: "When we went to the gynaecologist, we were told quite clearly: 'You don't want to have children anyway'" (Köbsell 2021).

Forty years later, Harper experiences something similar. After she tells her gynaecologist that she wants to have a child, he immediately looks horrified, only to start a friendly but nevertheless detailed Q&A session about her life: Whether she has a steady relationship with her partner, how independent she is, whether she can drive, and how she generally gets along. Her psychologist is also a disappointment. Why is Harper's wish to have an own biological child so strong? She wants to know. Why is she so obsessed with technological feasibility? Why not become a social parent? Why not co-parenting

children of good friends? Of course, it must be sad for Harper that she probably might not have the capacity to have children. And childlessness does always have to be thoroughly mourned. But at some point, when Harper worked through the mourning, the subject would be closed. Why this obsession with closure? Harper in turn wonders. The psychological technique of first explicating losses, then discussing and mourning it, and after working it through, leaving it, is familiar to Harper. Nevertheless, Harper is reluctant to accept the clear goal that has been set for her, and she thinks to herself that for the psychologist, this solution is too easy, especially because she had once met the woman with her husband and two daughters at Frühstück3000, a breakfast bar in Berlin's neighbourhood Schöneberg. She then gratefully declines the psychologist's offer in helping her mourn, and she also has to change gynaecologists. But Harper is most bewildered by a queer-feminist friend with whom she has long been involved in politics. The friend first shouts "Ewww!" and then plays out the "biopolitical card": The comrade accuses Harper of surrendering to the biologistic heteropatriarchy with the help of capitalist reproductive technologies. If not joy and direct support, then at least she expects acceptance of her reproductive wants. The harsh, judgmental disapproval hits her to the core. Harper had cultivated a certain alertness against health professionals, but with activist friends, she mostly felt at home. In contrast, she receives support in an online forum from a trans man who has experienced similar things. He encourages her to have children and recommends a competent physician. The concerned gynaecologist, the psychologist on a mission of grief, and the Foucauldian friend, all of them mean well for Harper, but instead of providing concrete support, they victimise and stigmatise Harper. Or they suggest new reproductive visions that are simply alienating, but not with the aim of naturalisation but paradoxically of denaturalisation. Following Mai Anh-Boger (2015), these forms of intervention can be called a destructive denaturalisation that silences women with disabilities, exerting as much symbolic violence as a normalising discourse of naturalisation that classifies women with disabilities as not normal, not natural, or monstrous.

"But maybe an AI could also be a buffer against these 'health experts' and defend my wanting of my own child," Harper muses aloud later that evening. AI would then be able to recognise the desires, concerns, and wishes of the specific person and would defend them against specialists. Perhaps the benefits of artificially intelligent systems for the discriminated lie in the potential for better, precise communication. Harper herself meets her current partner via the brand new dating app Sextn, which launched in 2021. Sextn is a result of the giant demand for dating apps during the pandemic. Sextn works similarly to TikTok, and in contrast to many alternative dating apps, Sextn is much more visual, effective, wicked, and fun. With alternative, often labelled as inclusive tools, users can determine the resulting suggestions themselves by specifying their search criteria. One of these apps is Gleichklang. The digital application relies on psychology, wants to "explore

deepness instead of surface," and thus produces lots of annoying amateur psychologists who prefer to start an affair with accompanying relationship counselling. The secret of Sextn's success, on the other hand, lies in its AI-centric approach in the form of an optimised recommendation algorithm. Instead of looking for psychological content, the motto at Sextn is: Just watch and enjoy. Sextn does not display a selection of partners as usual, but decides directly itself which images the users get to see. Harper never hides her wheelchair in photos, and the AI played the pictures to the right users in nanoseconds and without detours.

Harper experiences such digital spaces as essential. For she does not meet sex and dating partners in clubs, university seminars, or political reading groups. In these "real," "physical" analogous spaces, desiring glances ignore her. Harper also finds alternative, "inclusive" dating portals for the "impaired" and the "handicapped"[6] dodgy. Their sterile, often kept blue surfaces remind her of nursing and hospitals. Further, while using Gleichklang, Harper gets quite a few letters from "joyless leftists," as she calls them, humourless colds fishes. One woman writes that she has a beautiful face, that she doesn't seem disabled at all, and that the first thing she looks for in a person is the human being. Musical preferences for Manu Chao, Tocotronic, or Melissa Etheridge accompany chats of this kind.

John

A positive approach to AI is taken by John—a good friend of Harper's who joins us later. After the Capri Spritz, we feel a bit dizzy. And we need a break from insurance's mindsets. John agrees with Harper that he does not want to and cannot easily become just any cyborg, a cyborg who is supposed to wear bionic prostheses for others so that his missing arms and legs do not make others feel uncomfortable. John describes his current relaxed relationship with prosthetics as a long, deeply ambivalent process. Until then, he has tried many things. There were months with prostheses and years without prostheses, long phases in which he hid himself and sometimes hardly left the house. For him, prostheses were, as disability studies theorists have often critically pointed out, problematic normalisation technologies that were supposed to adapt him to the ideas of his environment (cf. Bösl 2009, 289–290). Although he knows that such times are not behind him forever, John does now enthusiastically speak about his AI-based BMW. And that the smart car gives him mobility, autonomy, and control. The BMW has a computer-controlled digital steering system and is a precursor to autonomous driving. Few know that many people with disabilities are already driving such cars and that they are actual AI pioneers. John developed the car together with an automotive designer. Its heart are parallel working computing units. They connect, control, and monitor system and vehicle technology via interfaces. Instead of pedals and a steering wheel, John controls the joystick with his extremities. He accelerates, brakes, and steers his car. The sensitivity of the

joystick control automatically adjusts to the driving speed so that John can navigate his car precisely in the city as well as on the highway.

John is particularly fond of pointing out that the "situation in the car is the only one in my life where I'm treated just like everyone else." When he runs over a pedestrian's feet with his hand bike, the person would even still apologise to him in a friendly manner. In the car, he would be approached like any other man misbehaving in a BMW—like a macking, car-driving asshole. In other words, like Harper, John uses AI-based technologies to combat the gender and sexual neutralisation that affects people with disabilities. Heike Raab describes such social failures this way:

> People with disabilities [are] often already inscribed with the failure of the gender norm qua disability […]. The situation of disabled people is in a way characterised by the impossibility of the possibility of a citation of gender and sexuality. As a result, the social field becomes characterised by a kind of denied gender belonging or identity.
>
> (Raab 2006)

For Harper and John, the use of AI technologies does not signify a comprehensive, global cripple revolution—the permanent change of a heteronormative, ableist[7] field of possibilities. And yet it does mean an appropriation for their own queer-crip purposes. But isn't this repurposing of AI then similar to the xenofeminist appropriation criticised above? Do not both usages of technologies mean a critical appropriation of technologies for their own progressive purposes? According to Harper, it seems questionable that xenofeminist acts of repurposing may result in heteronormative norms. Xenotechnologies have a too strong tendency to denaturalise. And the aggressive ways of denaturalisation serve to reify the binary logic between the categories of naturalisation and denaturalisation. Perhaps the car-driving John is neither part of the heteronormative, masculinist matrix nor a denaturalised, hyper-accelerated agile cyborg, but moves in-between. Just as John's conformity to a norm does not correspond to normalisation here, but to the longing for mobility, self-determined navigation, and a confrontation with his environment at eye level. Normality and normalisation have nothing oppressive in John's case, but something positive. Finally, this in-between also does not mean that John's complexly embodied cyborg practice goes unchallenged: For Harper, John's performance is often only an expression of the stereotype of the "super-crip," as she notes with her characteristic tone of defiance.

John is also a regular guest on talk shows and quite active on social media. In doing so, he enables other people with disabilities to engage in an empowering AI discourse without glorifying AI as such or negating himself and his body. John's narrative exemplifies a complex, ambivalent AI embodiment and can be read as a critical cyborg practice.

Disability studies authors such as Isla Ng propose the concept of complex embodiment to capture the intricate relationship of people with disabilities

to digital technologies. The concept was significantly shaped by Tobin Siebers (2008). The design and literature scholar drafted it out of his dissatisfaction with two competing approaches to the body: The medical model and the social concept of disability (Ng 2017, 166). Both, he argues, are simplistic. The medical model reduces disability to pathogenic, biological, and genetic factors. The social model of disability likewise flattens disability, but now through the mantra of social construction to external factors such as architectural environments, political programs, and societal positioning (Ng 2017, 166). Both standpoints can lead to the silencing of the "real" experiences of those affected. The medical model suggests that the person with disability is primarily determined by their physical body, suffers from that body, and uses technologies as medical tools to overcome that body—and basically themselves. AI, from this perspective, is seen as a possible remedy to regain sight, walk, or not be born at all. The social model assumes that the person with disability effectively no longer has a body and consists solely of externally constructed and changeable positions. The pain in the stump lies solely in the hostile view of the disabled person, in the lack of care structures, or in the capitalist meritocratic society. Pain can be hardly expressed in the social model. The first model proposes too much body, the second too little—hence the term complex embodiment. Complex embodiment by AI, in John's case, means describing the exact processes of how he might be classified as disabled and treated in a positively ableist manner while handcycling around town and then treated as a "normal" man just minutes later, after his transfer to the car. Complex embodiment also highlights the never-finished ambivalence that comes with wearing prosthetics. And for the cyborg figure, the model of complex embodiment provides impetus to depoliticise disability, neither as a physical deficit that can be compensated or ameliorated by AI nor idealised as a sexy super cyborg that blends easily and aesthetically pleasing with artificially intelligent media environments, but as a multi-layered, deeply ambivalent technology that first and foremost wants to be co-created by people with disabilities themselves.

Notes

1 All of the personal anecdotes described in this text have been fictionalised, including the naming. The stories summarise personal experiences of the author with other people, but do not reproduce them exactly in a documentary way. Instead, the anecdotes are mixed with narratives of people with disabilities from German talk shows (Talk am Dienstag 2019), German daily press (Beer 2017; Kaiser 2019), and social media (Umrik 2019). All sources are cited in the bibliography.

2 I use the term lipstick AI inspired by the contested term lipstick lesbian. Lipstick lesbians are lesbian women who are read as feminine and whose lesbianism is denied because of this femininity. In Ex Machina, too, the authenticity of femininity and womanhood is at stake—but now that of an AI figure.

3 The Heinrich Böll Foundation is affiliated with the governing German Green Party. It is considered diverse, young, and permeable for female politicians.

4 Min. 6:30; Böll Podcast Was ist künstliche Intelligenz? https://www.boell.de/de/2018/01/29/kuenstliche-intelligenz-wer-denkt?dimension1=ds_ki
5 Next to dominant cultural products described by Mitchell and Snyder, there have always been cultural narratives that depicted disability characters more contradictory, precise, and agential such as the documentary Crip Camp: A Disability Revolution, the queer-crip porn Want by Loree Erickson or the queer series the L Word. However, Mitchell's and Snyder's critique today still is valid for many mainstream narratives and especially for AI.
6 Despite the term handicap might sound trendy and innocent, many people with disabilities reject it. Because the formulation "hand in cap" establishes a difficult relationship between people with disabilities and persons who ask for money with their cap in their hand.
7 Ableism is the devaluation of a person or group with disabilities through remarks that at first sight appear positive, such as compliments on everyday routines, actions, or relationships. For example, it is ableism when a man with a disabled girlfriend is complimented on the fact that he is dating this same woman. The "compliment" implies that it is basically negative for the man to have this girlfriend, that the woman is somehow inferior to the man, that she is usually not worth being a girlfriend because of her disability, and that the man is doing something outstanding.

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5 Uncanny bodies

Queer subjects, artificial surrogates, and ambiguous robotics

Michael Klipphahn-Karge

5.1 Queer subjects

Queer bodies are booming. It seems to me that from the point of view of contemporary art production and its actors, they are predestined to show value in diversification strategies and serve as a cipher for the negotiation of overall social discourses on queerness—especially if they visually signal queerness (Lord and Meyer 2019 [2013]). Such artworks are particularly included in institutional exhibition contexts when they can be immediately classified as queer through their appearance. This refers to bodies that "challenge or rework bisexual and heterosexual norms, gaze regimes, and representational conventions, as queer photographic works by [artists such as] Catherine Opie, Del LaGrace Volcano, or Sarah Lucas" (Lorenz 2009, 135; author's transl.) do. Mainly Western queer artists—and even more so artists who use a queer concept of work—have learned to react appropriately to this situation and act accordingly: They affirm the need for the queer body, or queerness per se, to be exhibited by the art market and global art institutions and capitalise on these opportunities both personally and economically (Lord and Meyer 2019 [2013], 42f.).[1] In particular, the connection between artificiality and queerness in relation to the corporeal being emerges with some persistence in such contexts.[2]

In this chapter, I understand the artificial as an object that is partly made with technical means, which substitutes an original source. The artificial can also partially imitate processes and thus expand the original object, add to its processes, or simply illustrate them. I try to avoid attributions such as original or natural in relation to the source—for example, the human body as visual inspiration for avatars or robotics. The artificial is also inextricably linked to systems of power and knowledge and does not stand outside the construction of subjects but rather constitutes the construction of embodied subjectivity today (Munster 1999, 121).

Based on this, it is sensical to link the artificial and the technical body in regard to their approach to embodying queerness. These bodies are currently on the advance to stand up for queerness in the exhibition context as they are viewed as "highly artificial beings" (Engelmann 2012, 257; author's transl.).

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The examples of this are numerous, even if I only focus specifically on art exhibition events in Western Europe: The exhibition *Supernatural. Skulpturale Visionen des Körperlichen* (*Sculptural Visions of the Corporeal*; author's transl.) at the Kunsthalle Tübingen in 2020 asked about the hybrid Other in the context of new corporeality; the show *Real Feelings* at the Haus der elektronischen Künste in Basel in the same year focused on the emotive influence of technical body extensions on humans; and the Museum Folkwang in Essen in 2019 discussed the status of the subject in the age of machine embodiment in the presentation *Der montierte Mensch* (*The Assembled Man*; author's transl.). Artists such as Louisa Clement, Kate Cooper, Stine Deja, Goshka Macuga, Sidsel Meineche Hansen, Anna Uddenberg, and Jordan Wolfson expose queer bodies, substitute them with artificial surrogates, and flexibilises the corporeal being into the realm of the virtual by means of digital technology. In the process, the artificial corporeal surface is liquefied as a site of representation and critique. Thus, "currently […] a plethora of new variants […] [of queer], but also transhuman and hybrid images of the body are emerging, fuelled by possibilities of synthesising the digital[, the technical] and the real" (Kröner 2020, 69; author's transl.).

On the other hand, the arrival of technical artificial bodies as a means of representing queer aesthetics has so far been almost overlooked in art studies, with a few exceptions (Chen and Luciano, 2015; Busch 2021). Thus, the relationship of queerness to artificiality—especially when the latter is realised by a machine—is interpreted rather marginally or as an effect only of sculptural and plastic presence (Kunimoto 2017; Dobbe and Ströbele 2020; Krieger et al. 2021). The reason for this is also the infiltration of three-dimensional art enabled by recent technical and technological innovations. Through the process of constant mechanisation, existing theoretical constructs are eroded, as in those processes new ideas about material and material handling are produced permanently—thus making the genre boundary of sculpture more permeable in relation to the changing concepts of bodies and corporeality. And, in doing so, it becomes clear to me that studies of art and art history often linguistically fail to fully encapsulate the entanglement of queerness and the artificial in relation to the factual corporeal. A productive reading that can also understand the artificial body as a queer object that is exhibited, and thus made visible, is therefore just as missing as the theoretical reflexion of the substitution of queer bodies by an artificial "stand-in" in fine arts.[3]

This gap in research seems somewhat paradoxical to me, since technology in particular produces embodiments *en masse* and has a great influence on the corporeal, since "the human body is both open to the incorporation of technology […] and […] available to be incorporated into technology" (Busch 2021, 72; author's transl.). Furthermore, technology itself can be categorised as a marker that identifies the boundaries of the corporeal, for example, in robotics or by means of digital imaging tools (Calvert and Terry 1997, 5).[4] In this way, technology can "transcend categories of biographical,

cultural, normative contexts […], among other things by appearing as an […] avatar alongside a real bodily presence" (Kröner 2020, 67; author's transl.)—a connection that is closely intertwined with the technical reflection of the corporeal and is also referencing to queerness. At the same time, exhibiting queer and especially artificial queer bodies (for example, sculptures or technical digitalisation's of corporeality embedded in installative contexts) reproduces and emphasises existing stereotypes, which expresses itself in the "production of voyeurism, (the) affirmation of traditional structures of knowledge acquisition and […] existing minorising representational grammars" (Paul and Schaffer 2009, 9; author's transl.). "The central importance of the field of visuality as part of queer politics" (ibid., 11f.; author's transl.) underlines the necessity of placing the aesthetics of ambiguity in the focus of the study of queer representational practices.[5]

Fundamentally, visibility is the most relevant criterion when discussing aesthetics. Simultaneously, making something visible is always ambivalent, especially in relation to queerness: Firstly, queer imagery constantly oscillates between showing and concealing the physical. By this, I do not mean that something is hidden, but that a visually available artefact refers purposely to the withdrawal of visibility, meaning that this withdrawal becomes the subject of the pictorial by operating only with references and visual codes (Lorenz 2009, 140f.). Secondly, there are general debates about the pros and cons of making something visible: Markers linked to subjugation and servitude, such as ownership or disposability, are inevitably entangled with visibility (Phelan 1993, 6). So, on one hand, non-marking holds advantages for people who are usually marginalised by the social majority. On the other hand, by inscribing queerness visually into concepts of mankind, it highlights the need for openness of bodily alterity (Engel 2008, 16) and also erodes visual stereotypes that are firmly anchored in public habits of seeing. I believe that understanding these distinctions as essential to the study of queer aesthetics and openness as a form of visual expression provides possibilities for bringing ambiguous visual practices into view as a queer consequence. Moreover, insights into queer visual image politics and their resistance do not only lie in the balancing of logics of visibility, but in the willingness to focus on ambivalences and ambiguities inherent within the artworks.

I understand ambivalence as a description of "the mental and emotional oscillation between alternatives" (Lüscher 2011, 326; author's transl.), which is accompanied by ambiguities, especially in the field of aesthetics, on which I particularly focus in this chapter. I understand ambiguity as "the possibility of assigning an object or event to more than one category" (Baumann 1992, 13; author's transl.) and, therefore, a productive "disorder" (ibid.; author's transl.). The concept of ambiguity thus concerns both cultural objects and questions of identity in a hybrid society—especially if one defines it as an aesthetic characteristic that necessitates openness and the expansion of consciousness, for example, towards an art object or a technical innovation (Eco 1977, 52).

Regarding the following example of a work, I see the ambivalence, which is often attributed as negative, regarding the representation of queer bodies as positive and relevant. Linking (in)visibility and actual perceptions appears to me to be part of a critical and inclusive research practice that emphasises diversity (Nord 2000, 156ff.). In the following, these practices will serve as methodological approaches that can make queerness recognisable as an aesthetic marker and thus make the investigation of bodies as visual witnesses of queerness possible. In doing so, I focus primarily on those representations of the body that have been incorporated into the modulation of bodies on behalf of the manufacturers of artificial representatives, because these influences offer the greatest potential for friction: They are mostly heteronormative and subject to racist or body-forming relations and therefore representations of dominance. The ambiguous representation of humanised robots and (other) artificial intelligence (AI) systems as *white* and hypersexualised bodies is the main point of my critical reflection. As these artificial bodies take the place of "real" bodies, the question also arises as to whether these bodies—created by their producers as their image or ideal—are not also marginalised, stereotyped, and therefore offerings of "othering."

5.2 Artificial surrogates

Based on the current reception of queer (and) artificial bodies and their (in) visibility in art, I will focus on the constitution of these bodies by examining their ambiguities. The question of how artificiality and queerness are inscribed in bodies as objects of art plays as much of a role as the experiences that these bodies encounter. In addition, I discuss forms of rebellion of these bodies against such impositions. The object of investigation is a "real," physical embodiment, a robot, which is intertwined with systems of AI as well as animated and digital characters and their virtuality: The extremely provocative artwork by Jordan Wolfson called *(Female Figure)* from 2014, which is also controversially discussed in the field of queer theory (Goodyear 2020). The ambiguous potential of the case study lies in the fact that the artist, read as male, affirms queerness for his work, and in doing so, synonymously queers heteronormative constructions. Marginalised historical figures, such as witches, are included and simultaneously exposed via an artificial body that reflects certain normative gender images and racialised notions and mediates bodies, actions, and behaviours corresponding to this image through autonomous decision-making systems, references to surveillance systems, or wearables.

The work is an animatronic surrogate and a sculpture that dances to pop music. The figure, which I will label as a robot, is dressed in a blond, wavy, long-haired wig and a green half-mask (see Figure 5.1). This is reminiscent of stereotyped ideas of witches as well as of anonymising carnival disguises and nose linings such as plague masks (Feldhaus 2014). Of the remaining part of

(caption on next page)

the face, eyes and a mouth can be seen, which features shark teeth. The skin consists of a synthetic polymer, which in terms of colour is the embodiment of a *white* person, who at first glance can be read as female and is also identified as decidedly female by the artist's titling of the work. The figure wears a white body suit made of polyester, which is cut like a strapless waisted bustier in the torso area and narrows in the lap. This is trimmed around the waist with a white, semi-transparent chiffon apron. Around the figure's neck is a stretchy choker; on her legs and feet, she wears knee-high faux leather boots with platforms and spiked heels. She is rubbed with black dirt in various places. Her shoulders offer a glimpse into her interior, revealing gears and identifying the being's construction as mechanical. Her arms are unclothed but coloured in such a way that they appear to be gloved, synonymous with the clothed parts themselves. She is always exhibited in a small room that only holds a few people and thus appears intimate, which can vary depending on the exhibition situation. A shiny pole penetrates her abdomen and attaches her to a large mirror, behind which the functional technology as a body-external mechanism and the power supply are hidden (ibid.). The robot dances lasciviously, sometimes just languidly, as if absorbed in listening to Leonard Cohen's *Boogie Street,* Lady Gaga's *Applause*, Paul Simon's *Graceland,* or a narcotic version of Robin Thicke's *Blurred Lines* (Colucci 2014).[6]

The artwork is equipped with a motion sensor that detects when people enter or leave the room. Using facial recognition techniques, this semi-automated body is capable of simple interactions with the viewers and can dance up to them and look at them. *(Female Figure)* speaks with a sonorous voice that eludes binary gender attribution and lets the hypersexualised and feminised corporeality slide into ambiguity (ibid.). This ambiguity of bodily characteristics is symptomatic of the confusing relationship between queerness and artificiality that seems to unite exemplarily in this artwork. This fusion succeeds because the "monstrous body created by Wolfson is inductive as a gender body that has become deviant." For it "(demonstrates) bodies as the scene of monstrous social and subject relations" and refers to "how they have emerged through the amalgamation of new technologies […] in recent decades" (Volkart 2004; author's transl.).

(Female Figure) counteracts the persistence with which robotics have become ubiquitous as a promise of solutions to diverse social problems. In contrast to the withdrawal of social norms and traditional expectations that

Figure 5.1 Jordan Wolfson; *(Female Figure)*; animatronic sculpture, sound; overall dimensions: 182.9 x 182.9 x 73.7cm; 2014; Exhibition view, TRANSFORMERS—Meisterwerke der Sammlung Frieder Burda im Dialog mit künstlichen Wesen (Masterpieces of the Frieder Burda Collection in dialogue with artificial beings), 10 December 2022 to 30 April 2023, Museum Frieder Burda, Baden-Baden, Germany

Source: © Jordan Wolfson 2022; photo: Nikolay Kazakov

queerness stands for, robots are supposed to take on physically strenuous and socially stressful tasks, for example, in industry, the military, or care for the elderly. The term robot thus does justice to the origin of the word.[7] As embodiments of artificial cognitive performance and learning processes, robots are also entangled with AI systems—above all to be able to autonomously carry out the aforementioned activities under aspects of serviceability. Accordingly, the machine learning experience inscribed in recent robotics is conceived as a development of cognitive capacity resulting from interaction with the environment. Such a construction potentially enables the emergence of machine intelligence (Becker and Weber 2005; Roßler 2019; Bischof 2017). Such robots are achievable with "embodied, mobile […] [agents] whose sensorimotor feedback loops enable interaction with the environment," because this is the only way to construct "artificial intelligent systems that do not fail at the simplest tasks such as walking, object recognition, or navigation" (Weber 2003, 120; author's transl.). This reorientation also makes posthuman notions visible that are inscribed in AI technologies. This shows itself in the artwork through an influential machine networking with the environment in the sense of being embedded in it as opposed to merely imitating it (von Bose and Treusch 2007). *(Female Figure),* parallel to more recent robotics, also distances itself from *Cartesian concepts* that consider body and mind separately. In this work, too, cognitive performance by the information-processing system is only constituted through physical interaction, although this also happens more on a metaphorical level of art and through an interaction with the viewers than on a level of technology. The artwork thus represents the techniques of robotics and attached technologies of AI and is symptomatic of artistic references that network themselves mechanically with environments or thematise robotics.

Perception is also not a one-sided receptive or solely mental process. It only functions in interrelated action with the physical motor system. For example, seeing is only possible through the movements of the eye and these movements are only possible through receiving perceptive signals (Schill et al. 2008, 284f.). *(Female Figure)* recurs to this by means of facial recognition technology and motion detection, a method of machine vision that detects extraneous movements in the technology's field of vision. These two methods are embedded in the figure's eyes. Underlying systems, often including AI, enable the animatronic surrogate to connect with its environment (Birkett 2014). Such recognition systems use technologies that can match a human face by comparing the immediately taken digital or video image with a database of faces. The functionality is based on the determination and measurement of facial features extracted from specific images (Meyer 2021, 12ff.; author's transl.).[8] From a decidedly queer perspective, Wolfson's work simultaneously twists the normative gaze of the recipients. While the visitors look into the mirror to observe the robot, Wolfson's figure reverses the voyeuristic moment. Her eyes are not directly visible, but only in the mirror, and from this reflection, *(Female figure)*, an object and objectified

figure at the same time, looks back at the viewers, thus in a sense domesticating the gaze of the audience and destabilising their relationship to a "thing" that, based on its material and social genealogy, is originally conceived as submissive (Colucci 2014).

Even more, *(Female Figure),* beyond looking back, challenges the audience to close their eyes by saying in her non-binary voice: "Now close your eyes." Meanwhile, the audience continues to be observed and commanded by the robot, who asks visitors to repeat her words: "Say 'touch is love'" (Wolfson et al. 2015, 72). In this assumption of control over the viewers' gaze and, by extension, behavioural regimes, as well because of the manipulation of the viewers' gaze, I recognise a queer aspect that identifies the work as ambiguous: The negotiation of the sovereignty of the gaze, which can also be described as a queering of the gaze, empowers *(Female Figure)* to stand in for sexualised queer bodies.

At the same time, this added value in the conception of representation produces images that require permanent revision. *(Female Figures)'* body surface is made of a plastic developed for space travel and applied to an endoskeleton; the mechanical support structure of the artwork (Feldhaus 2014). Its substitution for skin form corresponds to the popular pictorial representation of robots and AI systems, which are usually visualised as *white* humanoids (Cave and Dihal 2020, 686). The figure thus exists in the tradition of a close link between *race* and technology and their visual representation.[9] It is observable that the features of humanoid robots become *whiter* the more human-like they are designed. An example of this are the hands of *(Female Figure)*, because they are the only body features that are not covered or disguised but continue to exist in their pure, white-coloured mechanics. The reason for this is detectable in the fact that these hands must perform the most complex movements in the periodic dance-based action sequence. If these hands were clothed, the fabric could be an obstacle to the smooth sequence of movements—but at the same time, they are supposed to appear as human as possible and therefore are paradoxically an even whiter tone than is the case of the rest of the skin-simulating polymer. *Whiteness* is generally conditional for narratives that (re)produce and maintain *white* hegemony. Racialised identity thus becomes an integral part of anthropomorphised artificial bodies and, from there, defines human likeness more precisely (Cave and Dihal 2020, 688). In this way, the dominant image of *white* people shaping the world and inscribing themselves and their embodiment in technical bodies is reproduced by *white* people designing *white* robots—along with the desires of the producers and their ideals of what constitutes humanity (ibid.). In terms of machine learning and adherent systems, the primary attribute projected onto this *white* technology is intelligence. Cognitive performance is thus just as closely associated with *whiteness* as cleanliness and purity (Dyer 1997, 75f.). The representation of robots and AI systems as *white* persons thus places these machines in a hierarchy of power above currently marginalised groups. For example, even

popular narratives of possible apocalyptical or fatal rebellions by robots or AIs, which are based on slave revolts, conceptualise the rebelling protagonists as *white* bodies (ibid., 213).

Building on this, however, the question of the relationship between authorship and work must be negotiated individually and independently. Fundamentally, in the production of cultural objects, I consider a balancing of the attributions of *race* in the context of artificial bodies in relation to the author of corresponding works to be uncertain terrain, for example, regarding the specific history of discrimination and the discourse of the intersectionality of Jews (Cazés and Monty 2020), to which the artist belongs.

Meanwhile, the modes of representation for robots in the context of art as aesthetic means must be questioned in general, insofar as they construct ethnicity. Why, for example, is *Ai-Da* advertised as "the world's first ultra-realistic humanoid AI robot artist" (Romic 2021), with a clearly visible artificial-mechanical body, the arms of which are clearly machine-like and mostly metallic, and a *white* head that can be read as female, with silicone-covered skin and artificial hair. While opening her solo exhibition at St. John's College in 2019, "Ai-da has been described as 'the brainchild' of Aidan Meller, a gallery director and art dealer" (ibid.)—and in that matter as the offspring of a *white* male. This description refers to the hypermasculine intention to use robotics to give birth to *white* bodies as serviceable images. Such images are not only visually *white,* resembling men, but, following stereotypical symbols of submissiveness, are attributed to female personnel—primarily in assistance systems such as Google's Alexa or Apple's Siri (Goldfuß and Sontopski 2021).

Thus, the image of the body and of women reproduced by *(Female Figure)* fundamentally stands in the way of a queer reading. But here I detect ambivalences: Of course, works of art are always a mirror of their time; as "products of material labour" they always reflect "general […] conditions of production and technological […] standards" and "their representation of social reality [in turn] reflects […] social consciousness" (Baxandell, 2003, 98; author's transl.). This social dimension of the work, which also includes a justification for criticising current conditions, illustrates the extent to which the producers of serviceable bodies—and this refers to robotics in general—misuse human surrogates as a cornucopia for their own ideal conceptions of the human, no matter how perverted or revisionist these models may be. In this way, artificial bodies are not only battered, but also marginalised in their representation for queer bodies. These contradictory manifestations of ethnocentrism and anthropocentrism in relation to the mechanical body identify the artificial robotic body as a machine "other," which is perceived as inferior and exoticised at the same time (Kim 2022).

In the following, I would like to briefly reconnect this parallelism of human and machine suffering: The artificial, in its embodiment through technology, emphasises a reference to the human body and can "be seen as

extensions of the body, which has gradually detached itself from it and objectified itself into external things" (Rammert and Schubert 2017, 351; author's transl.). The entanglement of body and artificiality on a level of the technical can thus be read in a narrower sense as a habitual reference to the object. It is found in an action with corresponding objects as well as the support of the body by these objects. This means techniques as objects inside and outside the body, as well as body extensions. In a broader sense, this connection can be discovered in "body techniques [as] other technifications of action," exemplified, among other things, in cultural techniques such as rituals, but also in relation to embodiment, for example, in social media, in which "body and technique [coincide] to a large extent as material and as form" (ibid., 352; author's transl.). If I read these facts queerly, the artificial thus works against its demarcation from naturalisms and thus against binary categories such as distinctions between mind and matter, or male and female, which have already begun to corrode since the mechanisation of modernity (Deuber-Mankowsky 2007, 277).

5.3 Ambiguous robotics

The green, hook-nosed half-mask of *(Female Figure)* challenges stereotypes of femininity and allows for queer revisions of the images evoked by the white body of *(Female Figure)*. The face associated with this mask is the formulaic folkloric countenance that has been persistently used in many popular images for the faces of women who have been said to practice witchcraft and thus to have a bogeyman relationship with the devil (Behringer 2009, 9). Accompanying this are references that above all aim to degrade women and their bodies for better use in patriarchal contexts. Corresponding bodies are to be subjugated; women are to be coded as irrational and branded as too defensive. The means for this is the insinuation of being afflicted with supposed evil (Federici 2017, 129f.).

Furthermore, the witch-like attributes point to the resistance of the non-hypermasculine body as well as to a withdrawal of such bodies from contexts of submissiveness (Behringer 2009, 100f.). Feminist writings of the early 21st century particularly emphasise, with reference to the witch hunt and its peak in the 17th century and its historical present (Grossmann 2019; Federici 2019; Chollet 2020), that "the power women had acquired through their sexuality, their control over reproduction, and their ability to heal" (Federici 2017, 213; author's transl.) stood in the way of the expansion of the patriarchal order.[10] The female body was therefore to be forcibly state-controlled "and transformed into economic resources" (ibid.; author's transl.). Aiming at the surveillance of bodily practices, the capitalist organisation of labour must reject the unpredictability of a magical practice that empowers bodies. During this, it also does so by means of establishing a Western-Christian worldview based on colonial constructs of sovereignty and servitude (Otto and Strausberg 2013, 6f.). The masculine desire endeavoured therein to domesticate female bodies from a

historical perspective to place reproductive bodily practices "directly in the service of capitalist accumulation" (Federici 2017, 113; author's transl.), which was accompanied by a rigorous criminalisation of contraceptive methods to establish a "new model of femininity […]—passive, docile, frugal, taciturn, always busy, and chaste" (ibid., 131; author's transl.).

On the one hand, I recognise a queer aspect of Wolfson's work in the attribution of the hypersexualised body of *(Female Figure)* to a figure like the witch, who celebrates the deviation from a collectively or individually aspired norm or a supposed ideal. On the other hand, I perceive the queer moment in the questioning of concepts of identity and belief and thus, from a historical perspective, also of capital logic and power. This critique of the production of social orders that produce hierarchy occurs through the reference to the witchy, deviant subject (Witzgall 2018, 15f.), which opposes colonial Christian practices (Federici 2017, 269ff.).

In the artistic spectrum, too, references to witchcraft challenge existing patriarchal patterns. Thus, until the turn of the millennium, witchy connotative references to the body most often have the attachment of the esoteric and popular, or they reproduce stereotypical images of popular ideas. Examples include artworks that popularise and display magical practices, such as possession and table-turning in Sigmar Polke's, ghost conjurations in Thomas Schütte's, or fortune-telling in Christian Jankowski's artworks (Kliege 2012, 9ff.). On the one hand, Wolfson's work, with its visual recourse to a non-hegemonic concept of art and culture, offers similar mercantile shock moments as gestures of masculine ignorance. On the other hand, the image of a genuine moment of emancipation remains, which intertwines features of a figure marginalised by its makers, such as the robot, with that of the witch. Both figures are inscribed with patriarchal dreams of creation, from whose shadows they emerge in the present to counteract, or even break, the hypermasculine and heteronormative visions that are inscribed in mechanisation, informational technologies, and femininity (Witzgall, 2018, 15).

At this point, a transfer to popularisations of AI systems is possible. Even if such technologies are by no means supernatural, machine learning, for example, is often problematically described as magical, because its modes of operation are partially "outside the scope of present scientific knowledge" (Campolo and Crawford 2020, 3)—a connection that can certainly be transferred to the way the public deals with queerness. However, the connotation of "magical" in the context of AI systems does not only mean a lack of understanding, but the concealment of a potential danger for the majority, which is made possible by the exploration and exploitation of data that are available in large quantities through digitalisation processes, among other things. This danger lies in a techno-optimistic and "unprecedented access to people's identities, emotions, and social character" (ibid.). Access to this data occurs without the need to take responsibility for the consequences of this action because corresponding procedures in AI systems run partly "as if by magic" and do so without rational and causal explanations. It should not

go unmentioned at this point that the underlying interpretations of the magical—implied by the association with the term "magical"—are also not unproblematic because they argue in a generalised way and impede "the possibility of recognising analogous cross-cultural and cross-epochal […] practices, their fundamental cognitive mechanisms, or epistemic qualities" (Witzgall, 2018, 15; author's transl.) as a focal point of the term magic. Therefore, magic is also a possibility to see non-Western knowledge production as a valid counterpart to Western epistemologies of knowledge.

This moment of emancipation is as intertwined with the masking of *(Female Figure)* as the story of the plague. The robot's nose case resembles the shape of the so-called plague Medici and, fittingly for Wolfson's work as an icon of early 21st-century art, "reflects the spirit of the time with its combination of black leather, proximity to death, and blurred understanding of history […]" (Ruisinger 2020, 248; author's transl.). Similar to the use of the artificial body that enables a queer body to take up space in exhibitions, representing Medici with beaked masks produced a rather "virtual career" in historical retrospect and shaped "the iconography of the plague not through […] [their] real existence, but through […] [their] depiction" (ibid. 248; author's transl.). Such masks are not to be found in the art of this period. They appear merely as a retrospective pejorative view of the plague or were used in later pictorial references to the plague epidemic as representative of purity and freedom from the plague, symbolically staged from the 18th century onwards. The "career [of masking] as a marginal phenomenon" (ibid. 247; author's transl.) can be transferred to the history of queer bodies, their visibility, and visual absence: The stigmatisation of queer bodies in the wake of the AIDS wave from the early 1980s onwards initially substituted the corporeal completely, as almost exclusively visualisations of the virus and medical diagrams were used to illustrate the virus. Infected persons were not, or were rarely, depicted (Lord and Meyer 2019 [2013], 30). The subsequent developers of related visual strategies of queer representation of infected marginalised bodies included artists and collectives such as Isaac Julien, Stashu Kybartas, Gran Fury, Nicholas Nixon, Lee Snider, Stuart Marshall, Mark Morrisroe, and others. In the wake of the epidemic, these efforts consciously opposed a simultaneous marginalisation and criminalisation of queer sex practices by bringing bodies back into the discourse. This "reification" of queer body politics with visibility was primarily based on lesbian artists and collectives alongside numerous authors—for example, Cathy Cade, Honey Lee Cottrell, or Kiss and Tell. These feminist struggles for the sovereignty and control of one's own body and its representation already occurred far before this crisis (ibid., 32f.).

In this way, the covering and masking of bodies counter the visual strategies of queer desire that Wolfson in turn emphasises with the permissiveness of his work. In combination with the hypersexualised, often taboo, and thus stigmatised female body of the robot, the mask can also be read as having a fetish element and as functioning as a tool that serves the rehearsal

of different social roles. In an ambivalent practice, the exhibition of a permissive and anonymised artificial body through the mask revises ideas that deem the display of queerness as too strongly oriented towards the physical and sexual, and that therefore seek to avoid it. On the one hand, this avoidance exposes discourses that aim to regulate corporeality as reductive and too narrowly focused on the relationship between gender and sexuality (Lorenz 2009, 135). On the other hand, the showing of this *(Female Figure)* opposes the "desexualised forms of representation […] [that] want to push sexual desire as well as sexual practices away, which are the actual origin of legal (and social) discrimination" (Mesquita 2009, 77; author's transl.). In this way, *(Female Figure)* also resists the systems of AI integrated into her body. By making "the face productive as a site of transformation" that can "quasi-cover one's own identity in the act of a performative flare-up," by means of wearing a mask, it also refuses "identification through biometric surveillance" (Blas 2020; author's transl.). The capability of the artificial body to look back at the viewers breaks the narrative and the role of being merely a coded robot that only performs an act because it evokes a feeling of uncertainty that is achieved through the robot looking back whilst having a human-like body.

5.4 Uncanny bodies

Wolfson operates with these tactics of ambiguity and uncertainty by deliberately creating ambivalence. Through uncanniness, the power structure between the audience and the objectified performer is disturbed; in short: He scares the spectators. Visual traditions in an art show that the artificial body has often been intertwined with the uncanny. In 1993 and 2004, for example, the artist Mike Kelley presented an exhibition entitled *The Uncanny*, which consisted of sculptures, objects, and paintings whose unifying feature was their uncanniness (Cameron 1993, 89).[11] Most of them were life-size polychrome models of the human body or of individual limbs. Taking Sigmund Freud's essay, *The Uncanny* (1919) as a starting point, and drawing on Ernst Jentsch's book *On the Psychology of the Uncanny (*1906), Kelley conceives the uncanny as the embodiment of doubt. This scepticism refers to the uncertain encounter between human and human-like object—a relationship that *(Female Figure)* also negotiates. The unsettling nature of the uncanny is thus linked to the question of aliveness, or rather to the ambiguity of this state. In his essay *Playing with Dead Things* (1993), which was written during the development of the exhibition, Mike Kelley deals with the nature of the uncanny and intertwines it with concepts of scale, colour, and ideas of the ready-made and doppelgangers. In it, Kelley describes the uncanny as an encounter between a recipient and a horrible counterpart and reflects on it as an impression "provoked by a confrontation between 'me' and an 'it' that was highly charged, so much so that 'me' and an 'it' become confused. The uncanny is [describable as] a somewhat subdued sense of

horror: Horror tinged with confusion." (Kelley 1993, 26). Kelley relates this discomfort to the object's entanglement with the viewers, which can be applied to *(Female Figure)*. On the one hand, her artificial body is domesticated, inorganic material, and thus not alive. On the other hand, it can be implied that it has an ambiguous life of its own because it encounters the recipients. In this way, it also becomes dependent on the bodies of the viewers (ibid.). Queerness appears as "a kind of activism that attacks the dominant notion of the natural" (Case 1991, 3). Thus, the queer body as "taboo-breaker, the monstrous, the uncanny" (ibid.) subversively occupies and "asserts a gap where one would like to be assured of unity" (Cixous 1976, quoted in Jackson 1981, 68). This gap denotes omissions that, arrested in their ambiguity, require scrutiny. By this, I refer to divisions between the human body and the artificial body, for example, through medical technology used in bodies, the emotional attachment and erotic relationship to non-human things, or the spatial fragmentation of intimacy through the digital embodiments of persons with whom one comes into contact (Jenzen 2007, 8). However, this gap also refers to the doubt of most of society as to whether artificial bodies and artificially altered bodies, or non-normative and queer bodies, are valid in the overall social—primarily in a more Western discourse.

Finally, I would like to locate *(Female Figure)* amid traditional art historical knowledge. It is evident that existing theories conceive the human body in the visual arts as both a medium of imagination and an image (Belting 2001, 22f.). In this dichotomy, the body thus fulfils a binary role: It is both image carrier and image, both the biological body of the model and the socio-cultural body. The image of a body is always also the image of the construction of bodies. In connection with the viewer's interpretation, the representation of these bodies is always linked to their personal references and is thus an impression and circumstance-based representation of the person depicted—one could also say: An "impression" of the person. The context in which the body is perceived and evaluated thus depends on the subjectivity with which the viewers encounter such bodies. These normative contexts can be culturally, socially, politically, or regionally connoted according to the regimes of viewing bodies, in general. *(Female Figure)* seems to forge a pathway—at least partially—through the middle of this art-theoretical fork in the road: By removing personifying attributes from the robot's body through the blending of the field of vision, an individual (or one could also say a queer identity) is created, regarding the binary categorisation of the body in art, which eludes existing classifications.

This production of an artificial embodiment of a queer subject occurs as *(Female Figure)* assumes an intermediate position of visibility, for example, by exposing the confrontational body, and invisibility, amongst other things by covering the face. Moreover, in this artwork, the mind, which is metaphorically substituted by intelligence, is neither adequately modelled beyond the artificial body of the robot, nor classically constructed analytically, but is generated in connection with the viewers (Weber 2003, 120).

Therein lies the potential of *(Female Figure)*. It can describe the openness and ambivalence of queer bodies with a work of art "that neither rejects nor fully identifies with the places materially […] and psychically [and psychologically] anchors in the dominant culture" (Muñoz 2007, 35; author's transl.). Her artificial body, which includes systems of disruptive techniques, functions, as illustrated, in the context of showing and exhibiting as a representative of queer bodies. This also creates a work in which

> bodily knowledge becomes technical, and the sensibility of robotics becomes human. Deleuze and Guattari have proposed to call this a "machine": not a technique, but a structure that includes human, social, technical, and material components. […] Thereby (it becomes) conceivable that not only a sensorimotor dimension, but also limitations and errors are the basis […] [of] "subjectivation."
>
> (Busch 2021, 74; author's transl.)

Such a subjectification, which Kathrin Busch states here about Marco Donnarumma's performative practice, also underlies Wolfson's concept behind the artwork and should stand here as an implication for *(Female Figure)* and the intertwining with queer aspects.

So, it has become evident how strongly queerness, like "cultural alterity," functions "especially [in] the socio-politically dominant discourse" as an extremely current "guiding difference" (Schankweiler 2012, 263), which is primarily attached to the body now. And it has also become clear how strongly artificial bodies are finding their way into exhibition contexts as representatives of these debates about the queer body. They act as multipliers that produce or reproduce technical explicitness and stereotyping, but at the same time have the potential to reject and break down these fixed assumptions about gender bodies. In this way, the investigations of artificial bodies as "stand-ins" open possibilities for focusing on ambiguity as a marker of queer aesthetics. It is therefore fruitful to push for an approach that emphasises the self-critical potential of art that resists fixed assumptions—especially when works of art are read as queer or when such readings are focused on or even forced by the artists or the institutional levels of reflection.

At the same time, such a virtuality of queer imagery demands active and critical viewing on the part of the recipients and builds on the development of a potential that is often not yet developed. To counter this latency, ambiguities and ambiguities in images must be revealed, differentiated, examined, and decidedly named—especially when the desire for images and actions are designed to create logics of visibility and are thus closely entangled with the exhibition of queerness based on the appearance of an artificial body. Through this kind of research practice, it becomes clear that even in an artwork like *(Female Figure)*, which for the reasons explained is very controversial and clearly bound up in Western hegemonies, there are hidden possibilities for creating productive confusion in a world that standardised bodies in many

ways and classifies them according to binary models. At the beginning of her cycle of movement to music, self- and audience-addresses, *(Female Figure)* herself formulates a corresponding desire for denormalisation. In this, Wolfson's animatronic robot attempts to get rid of its divisive roots of Western cultures, even of its creator, and claims its own space: "My mother is dead. My father is dead. I'm gay. I'd like to be a poet. This is my house."

Notes

1 I do not want to suggest that this approach is constitutive of institutionalised queer aesthetics. To claim this falls short, as does the concomitant attempt to grasp certain artworks under a marker such as queerness, and thus the attempt to understand them as a whole. Such a confinement runs the risk of domesticating queer practices and obscuring the radicality and specificity of individual gestures in favour of a more accessible mediocrity (Getsy 2016, 23).

2 This is not a novelty: From a historical perspective, the association of artificiality has also often been a means of the substitution and expression of queerness. An example of this is the entanglement and reciprocity of the aesthetics of queerness and campness (Sontag 1964, 1). These intersect in their desire to celebrate the exaggeratedly artificial in the visual constitution and gestures of bodies.

3 Viewing methods of art studies, referring to queer bodies, are generally characterised by reflexes that reduced complexity and focus mainly on a balancing of rigid binaries by postulating constructions of heteronormativity as the diametrical opposite of queer subjects and measuring queer bodies by the extent to which they are visually distinguishable from "normative bodies" (Butler 1995, 42). Accordingly, "(images are) interpreted in terms of a concept of representation based on agency and perceived solely as advocates or counter-advocates. […] The critique of myths of authorship, the insights into the effectiveness of gaze regimes, the questions of medial dispositive, as well as the numerous reflections on the pictorial constitution of body and subject, are left out of the problematisation of heteronormative constructions" (Adorf and Brandes 2008, 7f.; author's transl.).

4 The findings of feminist technology research and science and technology studies, in particular, are advancing this field (see Carpenter 2016, 2017; Kubes 2019, Kubes 2020; Richardson 2022), as are disability, queer, and gender studies (see Davis 1995; Morton 2010; Bryant 2011; in this context also Bennett 2010), which in parts show strong references to the sociology of the body and have considerable influence on diverse areas of the cultural and social sciences (see Harrasser 2013, 2016; Treusch 2020; Misselhorn 2021).

5 I recognise productive approaches in the study of queer "representations of bodies without bodies" (Spector 2007, 139ff., cited in Lorenz 2009, 136; author's transl.). This means representing embodied queer subjects "without attempting to represent them visually" and without "explicitly showing bodies that should stand for a deviation from the norm or a non-fulfilment of the norm" (Lorenz 2009, 136; author's transl.). Furthermore, concepts of visualisation are expanded to include "seeing more" to "move from there […] towards a reflexive practice of seeing […] [as] a reflexive practice of representation" (Schaffer 2008, 67; author's transl.). I read in this a willingness to give the images space for revision and actualisation, and thus the act of "seeing more" as a queer moment that is often used "only" for a didactic and normative impetus.

6 Amongst other things, Wolfson himself cites a film character as a precursor to *(Female Figure)*, which he refers to alongside Georges Bataille's History of the Eye (1928) (Kröner and Wolfson 2021, 157). *Holli Would* is an animated woman

portrayed by Kim Basinger in the 1992 film *Cool World* directed by Ralph Bakshi and is strongly reminiscent of *(Female Figure)* in her appearance and demeanour. The film tells the story of a cartoonist who finds himself in a cartoon world from which, in turn, *Holli Would* seeks an escape. This female figure strives to possess a human body made of flesh and blood instead of her animated body and achieves this goal through sexual contact with the film's protagonist—the artist who created her (Ebert 1992). Her highly stylised embodiment was created by rotoscoping Basinger's face and body, a technique for creating animated sequences in which objects are traced frame-by-frame in a live-action shot (Seymour 2011). This technique turns Basinger's living body into a lifeless, animated body, which in turn yearns to be reanimated (Connor 2019, 241).

7 The Czech word "robota" can be translated into "forced labour," which already served in the Middle Ages as a term for a worker in forced labour in the sense of a servant or even a slave (Pfeifer 1993).

8 The neural networks underlying the system are trained with thousands of labelled images to be able to deliver reliable results during image recognition. The labelling that accompanies this collection of images is often associated with precarious work, often performed by people in the global South. This typification by persons carries the risk that, without regard to cultural and social value judgements, image data is sorted based on *race* and gender, and the meaning of the images is persistently distorted in a way that is gender-specific and thus potentially discriminatory (Crawford 2021, 64f.).

9 One could read the design of (*Female Figure)* as resulting from colonialist genealogies, at least as far as *whiteness* is pivotal of Western visual cultures and hegemonies. Technical innovations, like robotics or AI today, for example machines, weapons, and transportation, were conditional to the enslavement, displacement, and expulsion of people and the exploitation of natural and intellectual resources under the pretence of discovering and educating non-Western societies. At the same time, the work also embodies the justification of this action, since Europe's *white* technical superiority was used to justify the domination of the "Other" and to interpret it as necessary (Adas 1990, 3).

10 At this point, reference should be made to racial, often feminist movements and their self-description as witches. They use this historical figure of thought for the purpose of racialised and anti-Semitic slogans. Such movements are to be criticised as ideological and ahistorical (Behringer 2009, 95f.).

11 This refers to the exhibition piece developed by Kelley under the title *The Uncanny* in 1993 as part of the show *Sonsbeek 93* at the Gemeentemuseum, Arnhem (NL) and the updated revival of *The Uncanny* in 2004 at the Tate Liverpool (GB).

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6 Patching and hoarding

Recodings of period tracking apps

Katrin Köppert

The pastel pink of the gynaecological chair that the French-Guyanese artist Tabita Rezaire converted into a cinema chair so that her 2016 video "Sugar Walls Teardom" could be viewed in exhibitions is an eye-catcher—a confusing one, in a way (see Figure 6.1). Who would possibly associate a gynaecological exam with the delicate budding lightness of a spring awakening in pink? The pop pastel colour seems to ironically break the context of biopolitical disciplining, control, and surveillance of the female gendered or menstruating body that Rezaire addresses in the video. At the same time, the pink of the chair takes on the image that tech companies give to their menstrual tracking apps: The overwhelming majority of such apps, which monitor the menstrual cycle with the goal of improving predictability of fertility and bleeding time, are in pastel colours, such as pink and purple (Pichon et al. 2022, 390). This gendering colour scheme of the apps corresponds with a visual appeal that primarily addresses *white*,[1] heterosexual, cisgender, monogamous, young, thin, and healthy bodies. Flowers, apples, hearts, dynamically curved body silhouettes, and infantilising comics can be seen disproportionately frequently (see Figure 6.2).

Rezaire uses colour and motif selection to reiterate the supposedly harmless silliness of this address, but uses montage to highlight the violence inherent in them, which is directed—intersectionally effective—against Black women as well as queer, trans*, and intersex persons of colour. The chair, as will be discussed further, is emblematic not only of the colonial racist history of gynaecology, but the digital technologies of the majority of such apps produced in Silicon Valley that (re)produce neocolonial conditions in reproductive politics, as well as trans*inter*misogynoir[2] in the context of health care. These conditions are particularly evident when apps are developed along *white* normativity and do not adequately address menstrual irregularities as a result of racialised stress. When cycle apps are not trained on commonly occurring irregularities, they are less likely to detect early signs of pregnancy, making menstruating BIPOC more likely to experience abortion restriction at a very early stage (Nobles et al. 2021).

Engaging with Rezaire's video work "Sugar Walls Teardom" (2016) as well as Luiza Prado de O. Martin's GIF essay "All Directions at Once" (2018),

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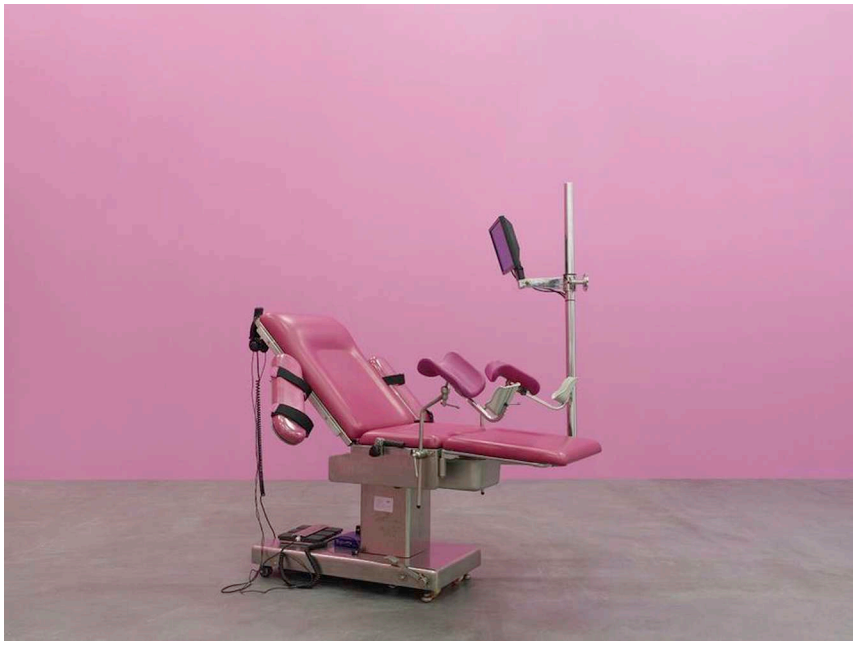

Figure 6.1 Tabita Rezaire. 2016. Sugar Walls Teardom. Gynaecological chair, mechanical arm, one-channel video on monitor (colour, sound), pink wall paint, 218 x 162 x 85 cm. Photo: Stefan Altenburger, Photography Zurich.

which are both explicitly, though differently tackle the here concerned questions, I will discuss neocolonial biopolitics in the context of such technologies used for cycle monitoring and birth control. I will critique the artificial intelligence (AI) applications underlying the apps in the long sequence of dehumanising practices of medical experimentation on enslaved women, with reference to Simone Browne's concept of "digital epidermalization" (2015) and Ramon Amaro's reflections on the "Black technical object" (2019). However, with the artistic works, these technologies are also discussed in their recodings. For this, I establish two aesthetic practices, which I title patching and hoarding. Using these practices as examples, I would like to describe that incompatibility, following Ramon Amaro (2019, 2022), and conflict after Wendy Hui Kyong Chun (2018), inform speculations about AI that I understand in terms of queering—that is, a theory, a practice, and politics that undermine the predictability of computations in that no common ground of fixed identities and categories can be assumed. Accordingly, the view transforms, on the one hand, to the concept of care or care work that is central to the discourse of reproduction and, on the other hand, to the argument of healing expressed within decolonial approaches—as well as by Tabita Rezaire herself (Mignolo and Vazquez 2013; Rezaire 2022). I understand care and

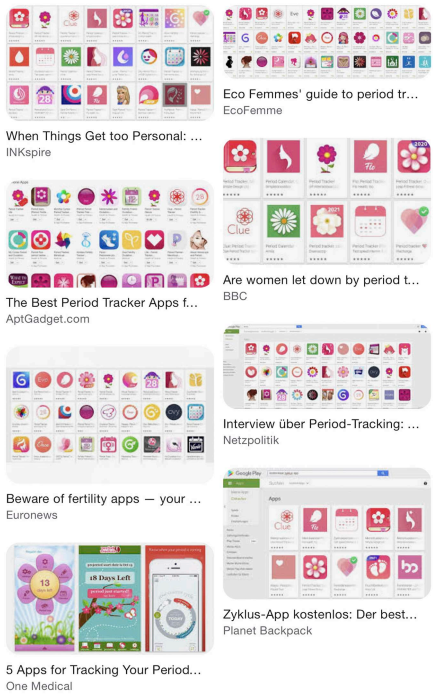

Figure 6.2 Screenshot app store, 15 February 2022.

healing as articulations of incompatibility and conflict that also subvert the promises of salvation and solutionisms too often associated with technology. I thus view the artistic works as exercises in an inhibition[3] of AI whose conflictual operations and incompatibilities—microscopically magnified—are not only the risk but also the potential for life hitherto discriminated against and marginalised by data and algorithms. The focus of my reflections is not the sometimes paranoid overdriven fear of the impositions of the algorithms and the subsequently quite understandable escapist flight movements or holistic ideas of healing,[4] but the modes of inhabiting something that is a toxic environment, but—nevertheless—can provide space for queer, black, disabled, trans*inter*, migrant life of colour due to conflict and incompatibility.

Digital afterlives of the medical plantation

On a psychedelic background, "Sugar Wall's Teardom" features surfaces—in the sense of various open windows on the computer screen—whose visual and textual contents refer to the US surgeon James Marion's Sims, the so-called "father of modern gynaecology" (see Figure 6.3). He had undertaken experiments on enslaved Black women in the 1840s—using Betsy[5] as an example—to explore techniques for treating vesicovaginal fistulas. Fistulas are

Figure 6.3 Tabita Rezaire. 2016. Sugar Walls Teardom, video 22minutes, filmstill.

a condition in which the bladder grows together with the vagina, which can lead to urinary incontinence and severe pain. They are the result of excessively prolonged labour during childbirth, which in turn is due to the harsh conditions that enslaved women faced (Snorton 2017, 17ff.). To supposedly relieve Black women of their pain, Sims performed surgeries without anaesthesia, which in turn was based on the racist notion, which helped legitimise slavery, that Black people did not feel pain to the same degree as white people (Jackson 2020, 186). The invention of speculum, which can be traced back to Sims and these operations, is the result of what the writing in Rezaire's video titled the medical plantation. The plantation, consequently, was not only the site of the brutal exploitation of labour and resources, but of a history, extending into the present, of the disciplining of the Black female-identified body, also branded as voluptuous, on the one hand, and the extraction of reproductive power on the other (Kelly 2016, 150–159).

Whereas Black women in the US at the time of slavery were violently forced by their *white* owners to reproduce in order to secure plantation work, after the abolition of slavery their reproduction was prevented, or at least monitored. Feeding into this—as Tabita Rezaire puts it in the video—biological warfare is the medical studies of the Puerto Rican population to develop the birth control pill (de Arellano et al. 2011; Marks 2010), as well as other attempts at birth control brought about by sterilisation and contraceptive measures (Briggs 2002). Luiza Prado de O. Martins has done ample research on this (2018b; 2018c). She also makes the connection between the biopolitical regime as the central engine of the colonial project and current technologies. These are—as the Gates Foundation-funded startup Microchips Biotech demonstrates—under the guise of reproductive justice for the "developing

world" applications to birth control in the Global South (2018a). The racist stereotype of people over-reproducing in the Global South is fed into digital technologies and subsequently technically reproduced. And where it is not so obviously population-based programs that prevent conception through technology, automated inequalities[6] can be found. Apps that monitor menstrual cycles with the goal of, among other things, preventing conception do not price in stress-related cycle deviations. This structurally disadvantages menstruating BIPOC in that they are disproportionately affected by stress-inducing conditions such as precarious employment, racist police violence, etc. (Ghandi 2019).

These are just two examples of a present that, in the context of reproduction, illustrate what Simone Browne, drawing on Frantz Fanon, calls "digital epidermalization" (2015, 109ff.). Epidermalization according to Fanon means the literal embodiment of racist discourse (2008). Race as a social construction of Blackness inscribes itself in the body, formally becoming an ontological statement about skin against which almost no ontological resistance can form. The Black body cannot escape overdetermination and branding as a consequence. In the context of digital technologies, this epidermalization means that it is again certain bodies that are rendered unequally reduced to data in biometric applications such as facial recognition, iris scans, and retina scans so that they are either disproportionately captured or misrecognised with a similar effect of disregard (Chun 2021, 22). That is, these bodies are either not seen due to defaulting to *white* norms from the soap dispenser, etc., or are captured where they are not at all due to poor or unbalanced datasets, leading to disproportionate arrests of Black people in the US in the case of police surveillance (Benjamin 2019, 113). Both forms of automated inequality are expressions of the moment of detachment of the Black body from the category of personhood or subjecthood that accompanies epidermalization. This is why Browne places biometric surveillance in the historical context of plantation slavery and the technologies of branding in place at the time (Browne 2015, 89ff.). Whereas back then enslaved people were marked with branding irons like cattle in order to criminalise them, among other things, today it is tagged datasets that misinterpret or expositionally filter Black people beyond recognition based on ascribed criteria.

In this respect, it is also worth asking to what extent the tagging of Black women in the US, who have been held liable and criminalised for abortion according to a racist campaign (Bonhomme 2020), correlates with menstrual tracking apps that protect Black women less from conception in percentage terms due to deficient datasets.

The exposed display of Black wombs as sites of reproductive danger in advertising campaigns translates into dated *white* prototypicality, i.e., the dating of the prototypical default setting of *white*, caregiving femininity (Gordon 2006, 239–240; Browne 2015, 110). The algorithms operate, so to speak, in the affect field of *white* motherhood, which, as Gabriele Dietze writes, ties whiteness to the "loving caring […] image of motherhood" (2020, transl. kk).

Black technical object and machinic non-existence

The lack of diversity of data training sets in menstruation tracking apps consequently evokes, as in facial recognition, the dissonance between the self-determination of Black menstruating persons and the experience of being able to perceive oneself as non-existent in datasets. In this context, Ramon Amaro speaks of the "Black technical object," referring—again in reference to Fanon—to the objectification of the Black subject, which is accompanied by the experience of psychic fragmentation, that is, the dissonance between self-image and external attribution (2019). From this, Amaro draws the inverse conclusion of the impossibility of compatibility. That is, racialised people only occur as individuals as long as their existence is aligned with prevailing concepts of the hierarchisation of race, exist in algorithmic space only as technical objects, and are not compatible with the imaginary system of *white* subjectivity. It follows, Amaro argues, that making the Black technical object compatible with mainstream algorithmic visions cannot be an option, as this would further reduce the lived possibilities that exist despite all the forms of dehumanisation. Hereby he critically refers to the approach of Joy Buolamwini's project "Aspire Mirror." The project, which was crucial for the film "Coded Bias" (2020), exposed the problem of machine discrimination against Black people through facial recognition software. Amaro's critique hinges on the fact that Buolamwini made a white mask that she held in front of her face to be read by the algorithm to point out the problem. He says that the use of the mask reinforces the assumption that coherence and discoverability are necessary components of the relationship between humans and technology. In a sense, the idea of the white mask saddles a system that includes exclusion, in this case of Black people, but also reproduces the notion of machines that are concerned with reducing inconsistencies and instabilities. That is, the inclusion in datasets or the representation of Black subjects in the datasets does not avoid the problem that this is fundamentally an arrangement that attempts to negate inconsistencies and differences in favour of coherence. In this respect, one could say that the white mask functions as a visual metaphor for the desire to increase diversity in tech companies as well as in datasets, but not—as is indeed inherent in the conventional concept of diversity[7]—to fundamentally question the mechanisms and institutions of digitality. Amaro thus problematises that although Buolamwini is concerned with expanding the understanding of AI and also with the inclusion of previously marginalised people in datasets, she remains wedded to the desire for representation and thus also to the components of coherence and detectability necessary for the design of human–machine relations (Amaro 2019; Chun 2021, 16, 22).

Cring for conflict

In contrast, Amaro, drawing on Stefano Harney and Fred Moten (2013), but also Gilles Deleuze and Félix Guattari (2018 [1986]), posits an expanded

understanding of the Black technical object that eludes the desire for representation. Starting from not wanting to be "correct," that is, operating from the place of lack or dissonance and wanting to be entropic rather than belonging as an individual, would allow for an alternative to computational coherence. Amaro writes: "[T]he entropic individual exceeds the barriers of social relations to enter an alternative space of being-made possible by a reimagining of the self. In other words, allowability for the unusable, uncommon, and thus incomputable individual potentialises the social space toward new ways of relating" (2019). Being indifferent to representation by AI, and thus incomputable, could not only enable lived experiences at the site of the objectified, but also allow the Black technical object to be perceived as generative of alternative social relations. By remaining incompatible within the network, the object generates new conditions of self-actualisation. The specificity of this relation, then, is that in contact with the network, entropy is the condition for transformation. Therefore, the perspectivisation of queering in the sense of the mediality of immersion or the immersive dissolution of identity categories is to be placed alongside that of entropy. The effect of which is processes of transformation and the politics of which is compassion for the self that is coherent in the encounter with artificial misrecognition—to take up Amaro's point here (2019). Misrecognition as queer potential can be followed up with Wendy Hui Kyong Chun's approach to "queering homophily" (2018).

Chun thematizes homophily, or love among equals, as a "fundamental axiom" (2018, 131) of networks as generated by media theory since the 1950s. That is, it is not the actions of individuals that are responsible for categorising networks, but the actions of those most like us who are in networks in our habitual neighbourhood. Similarity generates connections; similarity increases the probability of predictability. Love among equals is the starting point of network fragmentation and segregation, which is why Chun goes so far as to say that in networks, first of all, the primary source of inequality is not hatred of the Other, but love of what one resembles (2018, 139). To break through the logic of homophily and queer it in order to ultimately take the performativity of networks seriously would then mean acknowledging the conflictual, the uncomfortable: "Instead of seeing similarity as a trigger for connection, we should (…) think through the productive power of the uncomfortable" (2018, 148)—through the power of the dissonant and incompatible, so to speak, as Amaro describes it in the context of his understanding of the Black technical object (2018). The inability to conform to certain norms, e.g., representation, or to be incorporated into certain norms, as Chun puts it following Sara Ahmed (2004, 145), forms a new theory of connectivity, a queer homophily or a heterophily. Reproduction would thus not mean the replication of the same in the pattern of likes or in the pattern of coherence. Rather, reproduction would mean caring for conflict, that is, the cultivation of conflict, discomfort, and incompatibility. The extent to which incompatibility or conflict can be considered the potential of an AI that cares for alternative ways of being will be exemplified by two media-aesthetic processes that I would like to establish as

patching and hoarding in the course of my reading of "Sugar Wall's Teardom" and "All Directions at Once."

Patching or healing in difference

As Yvonne Volkart rightly notes, the "Sugar Walls Teardom" video mentioned at the beginning recalls the digital aesthetics of cyberfeminist parodies. Gender stereotypes, as parodied by VNS Matrix in the 1990s (2020, 25), are also traversed here several times. Even the opening sequence alone, backed by Far Eastern wellness music, is broken in itself several times. The pink chair, which according to the music and advertising aesthetics could also be a cosmetic chair, turns out to be not only one for gynaecological examinations, but also an instrument of torture. Finally, the protagonist Rezaire lies there, fixed with leather straps, tilted backwards and exposed, "to sit, watch and feel," as the inserted text says (see Figure 6.4).

The pornotopian techniques of viewing body orifices (Hentschel 2001) hereby invoked, equally valid in gynaecology and cinema, are transposed into the visual colonial discourse of the slave market with the references to coercion. If at the time of slavery, Black women's ability to give birth was first touted in advertisements (Kelly 2016, 150), they came "under the hammer" by highlighting the "important, saleable body parts" (Hooks 2018, 94). The glimpse back into the colonial past implied by this opening scene is interrupted in the next moment: The animated gold curtain falls and we are plunged into a science-fiction world in which, according to techno-feminist imaginaries, the womb is the alien who steps out of the spaceship. This image—as I have written elsewhere—recalls Tricia Rose's statement in the interview that was instrumental in coining the term Afrofuturism that

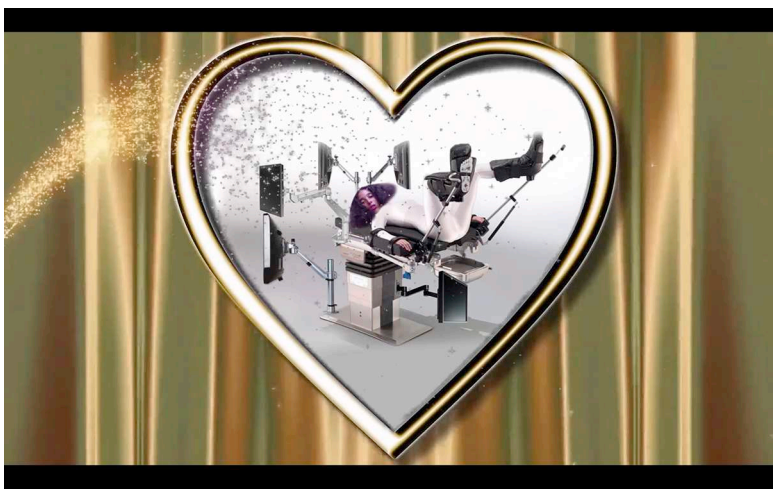

Figure 6.4 Tabita Rezaire. 2016. Sugar Walls Teardom, video 22minutes, filmstill.

childbearing is a weapon in the struggle for Black feminist futures (Köppert 2020). In just over a minute, "Sugar Walls Teardom" delivers the entire panorama: From the search engine-optimised advertising aesthetics of the femininity industry to gynaecology as a colonial subjugation technology to the Afrofeminist showdown in Star Wars.

The density of content is held together—according to Volkart—by an aesthetic of flowing with a simultaneous fast pace (2020, 25), but without renouncing moments of friction. I would like to connect to the latter because, in almost all of Rezaire's works, a procedure is noticeable that I will describe in the following text with the term patching. Again and again, images are applied patch-like, like small plasters, to the surface of the picture. Relationality is created by layering images on top of each other, but without them amalgamating (Pritchard et al. 2020), melting (MELT forthcoming), or blurring in the vortex of immersion, as is discussed elsewhere in the context of queer processes of computerisation. There is no seamless transition between images, structures, and surfaces. Dissonances remain between things that connect, or—following Kathryn Yussof—rifts, which is why I speak elsewhere of rifted algorithms with regard to Rezaire's aesthetics (Köppert 2021). According to Yusoff, rifts are the condition of survival in racially dehumanised worlds (2018, 63). And also in recourse to Ramon Amaro's discussion of the Black technical object, the potential of connection without seamless transition is to have built in the error and retained the incompatibilities. It is only with the unavailabilities that come with the errors and incompatibilities that AI can be understood as generative of queer, Black, be-disabled, trans*inter*, migrant lives of colour. Images applied like band-aids, then, represent a form of healing and care whose premise is difference (between foreground and background) and conflict. The image plasters heal by not leaving out wounding and conflict: "To live in difference, we need to start from conflict—rather than run away from it," writes Wendy Chun (2021, 247).

Hoarding or inhabiting excess

To Rezaire's process of patching is added another aspect, which can certainly be described with an aesthetic of flowing, but which seems to me more excessive in terms of the use of images and incompatible with metaphors of (inter)flowing. Patching, i.e., the overlaying of images that, although overlapping, persist in their limitations, leads to stacking or hoarding, i.e., a hoarding of imagery that exemplifies Rezaire's art (Kariuki 2016). I understand hoarding here as a critical allusion to colonial history and the accumulation of stolen art objects that cannot be justified by any scientific or curatorial interest. The violent and frenetic looting of objects from colonised countries, the majority of which never came to view but are left to rot in the cellars of primarily European museums (Savoy 2021, 22ff.), is something we can compare today with the neocolonial present of collecting data that, in all likelihood, will not all be evaluated either. Hoarding, however, also responds

to the discourse of denial, detoxification, or, to use Urs Stäheli's term, de-networking (2021). With the mass accumulation and layering of visual material, the desire for reduction is paraded as the privilege of those who can afford to detox. Similar to what is written in the "Xenofeminist Manifesto," I understand hoarding as an aesthetic procedure against the excess of modesty (Cuboniks 2018, 43), which, even before marginalised people had sufficient and non-discriminatory access to the Internet and its benefits, demands purification. The right to deny privilege is undermined by hoarding that stays with the uncomfortable and the incompatibilities and also ambivalences of digital technologies. Hoarding is in this respect a different form of denial: It addresses denial as privilege and reduction as part of the problem of excluding BIPOC trans*inter*women from, e.g., datasets. At the same time, exclusion does not become a starting point to fit into algorithmic logics in the most modest way possible. Instead, hoarding as an excessive accumulation of visual material undermines coherence and thus predictability. I would now like to discuss this as central aesthetic practice in the work "All Directions at Once" by Brazilian, Berlin-based scholar and artist Luiza Prado de O. Martins from 2018 and relate it to the image of "seed wombing" that I suggest for it.

The GIF essay "All Directions at Once" by Luiza Prado de O. Martins (see Figure 6.5) explores practices of herbal birth control as an act of decolonising the reproduction of marginalised communities. It centres on ayoowiri, a plant whose infusion was used by enslaved indigenous and African people as a contraceptive and, in stronger doses, as an abortifacient. Drawing on the experience of biohacking, i.e., intervening in, for example, reproductive coercion

Figure 6.5 Luiza Prado de O. Martins. 2018. All Directions at Once, GIF essay, still.

on plantations through plants and seeds (Sosa 2017; Prado 2018a), a perspective of Black feminism is elaborated whose notion of care is incompatible with stereotypical notions of reproducing motherhood. Therefore, I find the image of seed wombing catchy. Drawing on Ursula Le Guin's carrier bag theory and the thesis that femininity has never been absorbed into the notion of the peaceful gatherer (LeGuin 2020 [1989]; Gramlich 2020, 14), the womb is always also a seed bomb whose detonations may not bear fruit, but are nonetheless generative of non-heteronormative decolonial social connections. It is in this sense that I understand the aesthetics of the GIF essay. Prado de O. Martins herself says that the GIF format is predestined to understand the cyclical and precisely non-linear, predictable movement of life in the excessive stacking and downright bombarding superimposition of images (2018b).

The explosive nature of hoarding, which is expressed in the rapid superimposition, follows Frantz Fanon, who did not understand decolonisation as an apocalyptic moment that has already taken place. Instead, it is the cyclical form of explosive germination (Köppert 2021). Thinking with the cyclical temporal structure of digitally animated seeds, finally, allows us to understand AI as the art of critically relating to the demands of modernity's ideas entangled with colonialism and heterosexism—such as rational computation and linear time incompatibility.

Should smart machines therefore celebrate a queer coming out in the sense of an understanding that says it would all be less brutal once we arrived at the visibility paradigm? Isn't it rather about the cyclical (of menstruation) in its uncontrollability and the possibilities of stacking and overlaying to explore non-linear paths and to acknowledge, with the dense layering of images and typographies, the connections between past, present, and future and thus the seams in the differences?

I consider patching and hoarding as aesthetic procedures that imaginarily embed incompatibility and conflict, as I have discussed following Ramon Amaro and Wendy Chun, in AI and app technologies of predictive reproduction and imaginarily provide for recodes. These are aesthetics of disidentification according to José Esteban Muñoz, because "it is a working on, with, and against [AI] at simultaneous moment" (2020, 11). Hoarding is not about evading, and patching images does not redeem a holistic idea of healing or caring. Instead, they are procedures that magnify the conflicted, the different, and the ambivalent, so that incompatibility can become more probable as an opportunity for queer decolonial AI without asserting its predictability and prediction.

Notes

1 I use italics to highlight the social construction of the category whiteness. However, based on the social constructionist approach, I choose to capitalise Blackness to account for lived or embodied experiences, especially in the context of anti-racist resistance movements (Eggers et al. 2005).

2 Misogynoir is a term coined by Moya Bailey (2021) to describe anti-Black racist misogyny experienced by Black women. Bailey argues trans*inclusively and also speaks of trans misogynoir. That I choose to write with an asterisk goes back to not wanting to make invisible the specifically transphobic mechanisms in the context of misogyny. However, I am not exclusively concerned with trans misogynoir in this article. Moreover, I add the inter misogynoir not mentioned by Bailey.
3 I take my cue here from Wendy Hui Kyong Chun, who writes in "Discriminating Data" that we need to move "from dreams of escape to modes of inhabiting" (2021, 16). Furthermore, Christina Sharpe's reflections inspire my thinking. She writes, "It requires theorising the multiple meanings of that abjection through inhabitation, that is, through living them in and as consciousness." (2016, 33). Add to this the readings of Kara Keeling and José Esteban Muñoz. While Keeling consistently dwells in the image of im/possibility, that is, the possible within the impossible (2019), Muñoz in "The Sense of Brown" is concerned with the expansion of consciousness that Sharpe speaks of, with emotion (2020, 12). This, he argues, is the key to seeking out the possibilities of Brown life in the present rather than projecting them into the future.
4 Without wanting to minimise the discriminatory effects of AI, I also perceive a certain hermeneutic of suspicion, even paranoia regarding risks. According to Eve Kosofsky Sedgwick, paranoia often preempts outcome in the course of such scientific methodology (2014, 366). Even before we verify the flaws, we already think we know what unequal effects AI will have. Accompanying this hermeneutic is a backwardness to the past that is oriented to the flaw/problem, or determined by the flaw, so that there is no perspective beyond the critique. With Kosofsky Sedgwick and also Lauren Berlant (2014, 14), I would therefore argue for a reparative reading understood as de-dramatisation. To de-dramatise allows the supposedly incidental and "ordinary to work in its potential as an alternative present." (Köppert 2022, transl. kk)
5 Not only the missing surname points to the de-subjectifying treatment. There are also differing indications as to whether the picture shows Lucy or Betsy. C. Riley Snorton discusses the misnomer as another indication of the fungibility, or exchangeability, of Black bodies (2017, 23, 50).
6 I adopt the term automated inequality from Virginia Eubanks (2018).
7 The concept of "critical diversity" attempts to problematise the extent to which diversity is a management tool that, by pluralising positionings and perspectives, does not address overcoming discrimination and institutional power relations (Auma 2017; Mörsch 2018).

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7 Wild Science/Fiction

Conscious AI as Queer Excess in VanderMeer's *Annihilation*

Sara Morais dos Santos Bruss

Introduction

Considering the discussions on the "errors" of artificial intelligence (AI), current discourses—including those with emancipatory concerns—often refer to a notion of data-driven factuality that should accurately map individuals, thus producing clarity on difference and positionality as immutable categories of human action and being. "Accuracy" has become a buzzword that defines "good" AI, thus subsuming the ambivalent judgement of "good" under a positivistic understanding of categorisation, correlation, and sequentiality (Chun 2021; Ferreira da Silva 2018) which can be excavated from "raw"—meaning objective—data.[1] For example, the findings that black people's faces were less likely to be recognised by facial recognition software (Buolamwini and Gebru 2018) led to the demand that black people should be included in training data. The same demands have been made for gender inclusion after reports surfaced that trans Uber drivers were being locked out of their apps because of facial recognition technologies' incapacity to recognise these faces. These ameliorative suggestions leave out political contexts—black and trans people are already hypervisible, say, within crime statistics—as much as they do epistemic ones. The idea that big data provides the complete and thus accurate picture of something is subject to an imaginary of complete knowability and builds upon the notion of clear, unchanging concepts and categories, thus rigidifying gender, race, and sexual identities otherwise understood as cultural and in flux.

At the same time, AI positions itself in the midst of and indeed contributes to ambivalent and changing attributions towards nature and culture, which have always already followed motivations that are not only technical, but historical, social, and thus political (Schiebinger 1993). As is increasingly being discussed, notions of clearly defined categories, unambiguous correlations, and objective facts are based on and must be put into a genealogy with the eugenic production of categorisation and correlation based on racist hierarchisations of the human, which produces discourses on nature, biology, and the effects these categories have had on raced and gendered difference (Schiebinger 1993; Pugliese 2010; Chun 2021; Amaro 2019). The scientific preoccupation with

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"man" has thus first introduced correlational thinking as a social truth, which animates algorithmic pattern recognition, but can also be traced to ideological differentiations such as the nature-culture-divide and all its colonial, hetero-patriarchal baggage.[2]

The mathematical equations driving pattern recognition thus necessarily need to be observed within the epistemic environments that underlie its sense-making activities as cultural fictions or *mythoi*.[3] It is then no accident, for example, that research on the internet drew upon William Gibson's novel "Neuromancer" to describe cyberspace as a "consensual hallucination of the mind" (Chun 2021). Science and/or fiction is thus central to the development and mediation of how technologies are introduced and accepted into social life (Dainton et al. 2021).[4] Considering the role AI is increasingly playing with regards to defining ambivalent, contextual, and non-essential cultural concepts such as race, gender, and sexuality (Noble 2018; Buolamwini and Gebru 2018; Wang and Kosinski 2018), positivistic knowledge production in the machine seems not only deficient but also ideologically limited, as it reduces these concepts to codified, singular, and coherent data points.

In a longer genealogy, correlationism disavows indigenous, decolonial, feminist, and queer theories of knowledge and identity as it ruptures the ties between a corporeal positionality and its ability to produce knowledge and forcefully projects mechanisms of identification from the past into an individual's immediate future. Given such ideological framings of value and those who carry them, this chapter seeks to discuss how cultural imaginaries play a part in *and* are informed by contemporary evocations of AI and machine consciousness. The following provides a reading of Jeff VanderMeer's *Annihilation* and its cinematic adaption by the same name, from which I uncover a queer(y)ing of conventional and hegemonic AI narratives and their attachment to mathematical rationality and machinic objectivity. Instead of positioning AI as something that emerges from clear categorisations, *Annihilation* provides the basis for thinking about AI in terms of relations and excess, as well as the sociotechnical immersive environments that allow for and produce them. Following contemporary conceptions of the "environmentalitarian situation" (Hörl 2019), as they have occupied media theory of late (Hörl 2019; Schneider 2020), AI will be framed as an immersive system within which existing relations can be unravelled, questioned, and reconfigured. Such an immersion must be equated with an undoing of liberal/authentic subjectivity as the transparent and sequential figure of man. The vision of AI inherent to the environmentalitarian situation rejects the notion of unambiguous categorisation of identities (drawn together to produce coherent liberal subjectivity) to instead suggest that environmentalitarian immersion changes how to consider intelligence, knowledge, and thought as distributed and relational, as always already disordering and producing excess.

Considering the emergence of sentient AI such as home assistants that draw upon capturing emotions just as much as data points, it is precisely these affective and somatic experiences of desire so central to queer subjectivity that

are at stake within contemporary AI logics. Picking up on the relationship between environment, nature, and its propositions for the human as exceptional to its (animal, machine) others, I read *Annihilation* via the concept of "wildness" (Halberstam 2020), which Jack Halberstam understands as a shifting queerness that refuses to be subsumed into a coherent individual form. In such a reading, *Annihilation* represents a vision of AI that expresses ambivalence and multiplicity with regard to desire, corporeality, and subjectivity and puts to question the liberal-human subject as the narrator and agent of modern world-making. Instead of engaging with the machine as the logical continuation of the human or as its other, *Annihilation* produces iterations of AI that are immersive, "wild," and queer in consequence. Although this attribution and reinterpretation of wildness presented in *Annihilation* positions queerness as inherent to AI, both queerness and AI are not posited as inherently utopian in their production of excess, but need to be examined in terms of histories of violence in which current modes of desire and resulting speculations for the future are embedded. After all, if thought, power, and capital have themselves long since become "environmental" and abolished any sense of liberal selfhood in the process, immersion and queer excess as an abandonment of the "transparent I" can be read as capitulation, surrender, or an individual's "move to innocence" (Tuck and Yang 2012).

Annihilation: Area X as a Wild Thing

Annihilation is the first instalment in a three-part science fiction novel by Jeff VanderMeer, marking the biggest success for the author to date. The filmic adaptation of the book, produced in 2018 by sci-fi director Alex Garland, has launched VanderMeer's writing into the science fiction mainstream and opened his writings up for interpretations on the contemporary state of technology. Although VanderMeer himself is mainly concerned with environmental issues, his classification as an author of the "New Weird"[5] genre, as well as the film adaptation of the book under the same title by Alex Garland, offers reason enough to read *Annihilation* against the backdrop of environmental technologies and the current hype around Artificial General Intelligence (AGI). As a central motif, the story negotiates the relationship between corporeal subjectivity as a representation of liberal-humanist anthropocentrism and de-subjectifying immersion into the environment, which is presented as agential and multiplicitous. I understand *Annihilation* to negotiate a queer excess produced by logics of categorisation that can enable more-than-human relations, desires, and kinships. The analysis will centre mostly on the novel by VanderMeer. However, with Garland as the director, *Annihilation's* filmic adaptation necessarily needs to be taken into consideration, as it was produced in between two of his other works *Ex Machina* (2014) and *Devs* (2020), which both explicitly mediate machine consciousness and sentient AI. Contextualised through Garland, the filmic adaptation makes explicit the subtle entanglements of humans, machines,

and the environment as wildness that are explored in the novel. Therefore, it will also be consulted in parts, especially when its aesthetics turn to explicit negotiations of AI. Because the narrative differs between the two media forms in part, the plotline of the novel is central, while the film will be considered as revealing underlying themes within the novel's plot by aestheticising them as a form of mythmaking about contemporary technology.

In the novel, five female explorers embark on a mission in which their task is to penetrate and explore an ominous Area X. Area X covers an abandoned section of the US coastline that is kept under strict quarantine by a mysterious government agency called Southern Reach. The expedition consists of a biologist, a surveyor, an anthropologist, a linguist, and a psychologist. After 11 missions involving only men, this 12th is the first one undertaken by an all-female team of researchers. Reasons for this are not made explicit, but each individual seems to follow her own, often intimate motivations for participation. The biologist, who is henceforth the protagonist of the narrative, is in search of her husband, who participated in the previous expedition as a medic but never returned home. The couple's relationship seems loving, but also distant and somewhat alienated at times, though it seems to be the biologist herself who keeps her husband at a distance, always eluding the relationship to some extent. She is not portrayed as cold, but still as peculiar and withdrawn, her reticence referring not only to the intimacy with her husband, but also to the other researchers participating in the expedition. Soon, the other women express mistrust and scepticism towards the biologist, who doesn't seem to mind the increasing alienation from the group.

However, these peculiarities also seem to be the characteristics that allow her to survive the mission. While the linguist leaves Area X in an unspecified way before her introduction into the plot, the anthropologist, the surveyor, and the psychologist each die slow and painful deaths. The biologist is the only one who recognises a tunnel as a tower; her impulses to investigate the environment seem to follow a different logic than the interests of the other, seemingly more rational researchers. As a consequence of this waywardness, she is contaminated: A strange entity that autonomously and tirelessly writes phrases and sentences in organic material on the walls of the tunnel/tower pollinates the biologist with an indefinable organic substance that immediately begins to alter her body. From that moment on, all researchers sense an invasive presence that cannot be located. But while the others perish at the mercy of this presence, the biologist seems to undergo a development in which she is distanced from herself, but undoubtedly continues to stay alive and conscious until the end.

Soon, the novel's plot revolves only around the biologist's encounter with this entity, which she christens "Crawler." The entity Crawler seems omniscient and omnipresent. Even though Area X is presented as a wilderness agentively confronting the humans, the abstract descriptions the biologist attempts to articulate before the actual encounter describe Crawler the

way one might be an artificial hyper-technological entity rather than a natural body or a modern subject. At the same time, the biologist's own subjectivity also becomes increasingly vague as a result of independently occurring changes in her body—more and more, the transparency and coherence of her articulated sense of self seem to dwindle. While the biologist's "I" repeatedly emerges through self-reflections and memories, by the end of the novel's narrative, it must be questioned whether she can still be conceived of as a human subject at all, as her body emits phosphorescent light in the darkness and her thoughts no longer seem entirely her own. Evoking the title of the novel, the biologist asks herself:

> was I in the end stages of some prolonged form of **annihilation**? […] In a great deal of pain, feeling as if I had left part of myself there, I began to trudge up the steps […]. (272, emphasis mine)

Despite it causing "a great deal of pain," enough agency and will remain to leave the place of the damned encounter. The question of what is actually left of the biologist after the encounter is to a point unanswered, as she claims: "Before she died, the psychologist said I had changed, and I think she meant I had *changed sides"* (244, emphasis in original). It seems clear, at least to the others, that the biologist is no longer part of the human team forcing itself into Area X, but instead has immersed herself to become a part of the hypernatural, violent, and excessive landscape of the wild.

This passage suggests an acknowledgement of contemporary logics of the human that distinguish human consciousness and cognition from both the natural and the artificial realms of what is commonly understood as intelligence. What remains of the biologist is thus sentient and conscious, but incommensurable with the hegemonic notion of liberal-human subjectivity; she has changed sides, becoming part of the wildness. The biologist pushes forward into the wild and loses all selfhood within it. The last two sentences of the book express this loss of self when the biologist states:

> I am the last casualty of both the eleventh and the twelfth expeditions. I am not returning home. (241)

The biologist went on the 12th expedition in search of her husband, who himself participated in the 11th. The sentence suggests that her journey is in the process of leading the biologist to reuniting with him, precisely because she no longer can distinguish between the lost husband and herself because, potentially, Area X has obliterated the difference to a hyper-technological, or natural cultural, metaphysical state. While the biologist's conflictual marriage never becomes fully transparent in its structures of desire, the almost soothing promise of unison towards the novel's end promises some form of resolution, even if the biologists consider this resolution to come in the form of her as "the last casualty."

In the cinematic adaptation, the biologist (played by Natalie Portman) encounters the entity in a sequence that mirrors contemporary narratives of AI consciousness. The encounter plays out between the biologist and an initially obscure, somewhat human figure that seems to consist merely of silvery material. The being then continuously develops through its interaction with the protagonist and ultimately becomes her twin, mimicking her appearance and movements. The film shows a slow progression in which the silvery humanoid figure slowly takes on Portman's skin tone, hair, and facial features. Much like contemporary machine learning, the entity first learns on the basis of the data provided to it, imitating previous behaviour to slowly develop predictions for the near future. As the scene proceeds, the now human-looking figure also seems to develop an independent interiority as a result of its continuous mimicry. Within a short period of time, the development detaches from simple prediction to emulate, or actually become, consciousness: The AI surpasses the biologists input data and frees itself from mimicry, only to attack.

If there had not been enough reason before, this encounter is the culmination of a negotiation of human subjectivity and the immersive reality of Crawler as AI: Area X is clearly not to be located in the realm of the natural, but rather in an understanding of technology as; an becoming immersive lifeworld with other sense-making practices and agencies. Against the background of an agentive-becoming environmental, or a media ecology, the film picks up on a shift within AI discourse here, which seeks to undermine the rigid boundaries of an unambiguous categorical logic. As a supernatural and agential landscape, Area X is the realm of the Crawler, and Crawler is, in a sense, indistinguishable from it, a super-AI that has attained consciousness and is seeking a place in the world by devouring "external" knowledge and subjectivities. "Free will" and agency are stylised as indicators for intelligence—being able to act against one's "nature," which is presented here as input data—and become the standard of measure, which groups entities beyond liberal subjectivity and according to the wildness' own hypernatural order. Both book and film express this, albeit in different ways: While the book never becomes explicit about the intelligence's form, the film anthropomorphises it, but leaves open whether or not the android takes over the biologist or merges with her. In both mediations, Crawler is the entity that knows how to subjugate (wo)man and (natural) nature, or at least to take them over, to deprive the remaining human subjects of their sense of self, their will—and their life, if need be. At least for the biologist, the "takeover" by conscious AI is not necessarily a hostile one. If *Annihilation* represents AI as an immersive technological system, what modes of relation could emerge from this representation, and how do these help to read queerness as sociotechnical, immersive, as another configuration of technological systems of AI? What exactly is the titular annihilation directed against?

Wild Science/Fiction: Can Queer Machines Strike Back?

Contrary to its title, *Annihilation* does not seem to refer to a complete eradication of lifeworlds and environments. Instead, I want to suggest that what is eradicated is life *as we know it*. This becomes most obvious in the film's aesthetics, where the characters that accompany the biologist undergo a process that can best be described as "death by landscape" (Atwood 1998 [1990]), as an eponymous short story by Margret Atwood conceptualises. In *Annihilation*, we see characters mutate into plants and hybrid creatures; their genetic material is transformed in Area X so that they become a part of the landscape, indistinguishable from the non-human environment. In Atwood's story, too, a girl disappears, only to reappear as a tree. In an analysis of Atwood's story, Elvia Wilk writes about the dissolution of subjectivity as a potential for agency beyond identitarian normativity:

> […] [T]he literal becoming-plant that happens in these stories suggests the potential for agency in the willing dissolution of self. Knowing how to dissolve and become other is a non-codified and embodied kind of knowledge that women, and other supposedly unstable bodies, have been cultivating for centuries, because they've had to. Given the reality of planetary extinction, driven by the notion of the human as bounded figure with unique agency over the landscape, one could argue that this is exactly the type of knowledge currently needed. This is a knowledge about how to actively **annihilate** the supremacy of the self, and in turn the category of human selves altogether. This is the knowledge that death by landscape is not death at all; where landscape is not a threat, but a possibility, **perhaps the only possibility.**
>
> (Wilk 2019, n.p., emphasis mine)

Wilk's reading allows for a re-evaluation of what happens to the biologist. After an immersion into Area X, the biologist's subject successfully eludes the categorical certainty that AI usually relies on. For the biologist no longer knows whether she and her identity correspond; she becomes a multitude, an open system that connects to and reproduces the wildness beyond the boundaries of what it commonly means to be human. This not only puts into question a romanticised notion of nature that is repeatedly exoticised as the "other" of culture, but the speculation about wildness is also aestheticised in full ambivalence—as violently appropriating, sometimes to the point of death, as well as redeeming and opening, it penetrates and engulfs the humanly constructed boundaries of what is usually represented as civilisation without the need for innocence. The biologist describes this encounter, in which the crawler's machine intelligence is made sense of, as follows:

> […] And what had manifested? What do I believe manifested? Think of it as a thorn, perhaps, a long, thick thorn so large it is buried deep in the side

> of the world. Injecting itself into the world. Emanating from this giant thorn is an endless, perhaps automatic, need to assimilate and to mimic. Assimilator and assimilated interact through the catalyst of a script of words, which powers the engine of transformation. Perhaps, it is a creature living in perfect symbiosis with a host of other creatures. Perhaps it is "merely" a machine. But in either instance, if it has intelligence, that intelligence is far different from our own. It creates out of our ecosystem a new world, whose processes and aims are utter alien – one that works through supreme acts of mirroring, and by remaining hidden in so many other ways, all without surrendering the foundations of its otherness as it becomes what it encounters. (235)

The metaphorical thorn that Crawler's queer intelligence inserts into the world is a form of desire that exceeds liberal subjectivity. Crawler as an environmental AI has both the power to completely transform its material realities, while remaining attached to the worldliness that has potentially created it, thus without cutting all ties to its problematic histories. Read through Halberstam's Wild Things (2020), *Annihilation* articulates queerness as wildness, eludes algorithmic forms of identification and intelligibility, as well as assumptions of newness, and follows its own definition of intelligence. Its agency lies in the excess and uncategorical wildness, which allows it to forcibly take over prevailing structures and dissolve any sense of selfhood and identity. *Annihilation's* queerness is articulated by means of non-identification: Crawler is neither human, nor machine, nor passive nature, but pure agency and desire. The longer the biologist remains in Area X, the less she manages to conceive of herself as self, as subject, or as uniquely human—to be understood here as a specific normative manifestation of the bourgeois-liberal subject, which Caribbean philosopher Sylvia Wynter criticises as the "overrepresentation" (Wynter 2003) of the human for the displacement of other living beings that do not fit into the lifeworld of white heteropatriarchal subjectivity. That such an overrepresentation has been written into technological infrastructures has been noted across media forms (Hooks 1995; Dyer 1997; Browne 2015) and has received attention within critical scholarship on AI of late (Noble 2018; Benjamin 2019; Chun 2022).

Against the backdrop of such a critique, the biologist can be read as a resistant figure to such overrepresentation. Her nonconformity (towards her marriage, her career, her peers) culminates in a potential queerness and is the unmistakable reason that ultimately ensures her survival in Area X. This queerness (as literal oddity) arises, among other things, from her portrayal as strange and withdrawn, as a woman who always evades marriage to her loving husband to some extent and who does not fit the normative image of a happy wife in a monogamous heterosexual relationship. The biologist's memories circulate around the many times she snuck away to be alone with a micro-version of the wildness, perhaps as a harbinger of Area X: A small pond on an abandoned construction site presents itself as her retreat, where

she could observe emerging life and get drunk—an expression of sorrow at the perceived dissonance between wild desire and existing normativity she conformed to at the time. And the husband, too, seemed to know that Area X would have brought an understanding and acceptance of mutual opacity to the relationship that was not possible in the society left behind, leaving messages for the biologist in his diary as if he knew she would make her way to him. Contrary to the title, such a reading of *Annihilation* centrally negotiates the "making kin" (Haraway 2016; Lewis et al. 2018), the forging of new relations of kinship beyond heteronormative human–human desires as an ever-present act of revitalising and incorporating queer potentiality that draws from excess and opacity. It is perhaps not a coincidence then that Area X itself is a kind of trans* ecology and the biologist is an expert for transitional environments, for transitory ecologies as worlds that cannot be clearly defined as a unified (eco)system. In this sense, the queerness represented by *Annihilation* is less characterised by identity-political representation (as it has been normalised in the West, for example, by slogans like "we're here we're queer"[6]). Rather, it unfolds through a subtle, wild way of forging relationships that subverts the (heteropatriarchal) compulsion to identify the excess of subjectivation—as opacity, fluidity, and nonconformity. Queerness is constituted under the radar and articulates a distributed relational agency that resonates with especially femme queerness, or queerness in the Global South, which is often articulated through its own logic of opacity, showing itself only to those that have intimate familiarity with its form and expression (Ding 2002).

Transferring the fictional representation of the dissolution of liberal subjectivity to machine production processes in the sense of AI, the above narrative suggests that it is precisely in the excesses and gaps of the tightly meshed categorical network with which most AI is equipped that queer desire becomes articulated. The immersive Area X, Crawler, and the dissolution of self that the protagonist undergoes can be understood as a guide to a "Queer OS" (Keeling 2014; Barnett et al. 2016), a queer operating system that fundamentally questions the common sense of correlational machine logics. Proposing such an operating system, Kara Keeling articulates queerness as instability that forms between algorithmic certainties, allowing meanings and relationships to emerge from excess. Instead of a logic of identification, this gives rise to an approach that

> understands queer as naming an orientation toward various and shifting aspects of existing reality and the social norms they govern, such that it makes available pressing questions about, eccentric and/or unexpected relationships in, and possibly alternatives to those social norms.
>
> (Keeling 2014, 153)

Expanding this understanding of queerness to "an operating system of a larger order" (McPherson 2011, cited in Keeling 2014, 153), Keeling projects

technology as another space in and through which social norms are expressed and governed, but can also be transformed. If *Annihilation*'s narrative in book and film negotiates technology as environmental, then this offers an ambiguity that questions the bounded distinction between nature and culture and subject and object, just as Keeling and also Halberstam do with relation to technology—as the modern capitalist expression of colonial ordering mechanisms—and the wild as disordered desire crossing through the material form to explore its multiplicities. Read through these two queer theorists, Area X is an immersive space that negates individuation; it is both natural and hypernatural; it attaches itself and occludes histories of colonisation, which include forced heterosexuality and modular modes of control. Geographically located on the West Coast of the US, Area X thus serves as an allegory for Silicon Valley, once the land of the indigenous Ohlone people whose enslavement, displacement, and dispossession accompanied the first electronic infrastructures.[7] The seemingly natural geography is disaffected from connotations of passivity and extractivism, as it attaches itself to the artificial when the researchers encounter diffractive modes of reproduction, where species mutate and merge into one another in a way that would not be possible in a merely biological understanding of the natural. Area X as nature refuses passivity and rebels against its extractivist exploitation (and exploration as an object), as it either engulfs or annihilates the violent attempts at scientific exploration and sense-making. Area X thus signals technological restructuring as well as a wildness that exceeds the forceful modulation humans impose onto it. With Halberstam, such a definition of nature's "wildness" can be conflated with Keeling's queerness in the sense that it presents "an uninhibited way of being in the body untethered by categorisation" (Halberstam 2020, 4).

In such a reading, *Annihilation* formulates a critique of the normative narrative of data objectivity (as singular and non-ambiguous categorisation or as "raw" data), which signifies progress for a few and catastrophe for many others. Following Sylvia Wynter (2003), such a sense of objectivity as certainty is limited because it absolutises a lifeworld of bourgeois-liberal, and thus white, heteronormative subjectivity, and posits it as a foil for the human being itself. The figure of the biologist thus exits the normative relation humans are supposed to have with non-human entities, no longer seeking to rationally categorise her knowledge on them nor seek out their domination. Such a change also includes a different form of desire, since the apprehension of the self and the supposed "other" is understood as always already a bit opaque, experienced only in splintered encounters, but always somewhat palpable in its intensities. The biologist's failure to return to civilisation is then paradigmatic of a departure from the bourgeois nuclear family and the emotionally unfulfilling marriage. After all, in elementary particle physics, the term annihilation is also understood as a process of destroying coupled particles, literally exploding heteronormativity (Barad 2012). In such a reading, the biologist does not die; she will only never return to the socially

intended order, never again make the attempt to be a liberal subject in her big city life with its broken marriage and failed career, but will find herself and also her husband in the anti-categorical wilderness. In place of marriage as a categorical form of liberal (inter)subjectivity, a relationship of care emerges that is not natural but, in a sense, supernatural or technological, since the origin of the biologist's change is never fully revealed. However, her care and her will to leave the order behind are rewarded, as the biologist, rather than dying miserably like the other members of the expedition, is welcomed into and by the wildness. With this affirmation, she loses identity and identifiability, and the book ends in only conditionally coherent sentences about her affective incorporation and a sense of belonging. In the film, the biologist is reunited with her long-lost husband at the end, but a flash of both their eyes in the final scene casts doubt on their humanity. This scene suggests that it is the AI-like androids that are returning to the world from Area X. In the book, it becomes increasingly clear that humans are not. If this exit leaves open, as it were, how the story continues, the choice of this moment as the endpoint of the first narrative can nevertheless be evaluated as queer temporality (Halberstam 2010), as a suspension of the norm.

Becoming Environmental and the Normativity of the Environmentalitarian Situation

Annihilation seems to be a reverberation of the recently made acknowledgement that "man is neither height nor centre of creation" (Lewis et al. 2018, n.p.) and thus cannot be the only subject of action and agency. AI, too, can only join the world of agentic artefacts and objects as they have always already been conceived through non-western philosophy and indigenous epistemologies. However, with Eve Tuck and K Wayne Yang, there is another reading that emerges from the story that the authors describe as "settler moves to innocence" (Tuck and Yang 2012). Even if disidentification with liberal ascriptions of selfhood is represented here as a queer potential of liberation, the question of who gets to inhabit or embody such agency is in itself decisive for the critique of current conditions, since the violence of categorisation and scientific logics of evidence have yet to be overcome. Indeed, the turn away from intelligible notions of subjectivity that is proposed through a turn towards the wildness has historically only been deemed successful and revolutionary for those already considered within notions of the human and is thus to a point affirming of precisely the liberal notions of subjectivity that wildness opposes. The experience that the biologist has in giving up her own subjectivity may open herself up to queer desire, but it also enables her to leave behind her own involvement in problematic genealogies of extractivism, racism, and dispossession as central functions of a heteropatriarchal colonialism that has distorted the environment in the first place. If the novel is perhaps ambivalent in this respect, the casting of Natalie Portman in the role of the biologist translates into the representation of a normative and white-passing

figure of heteronormative desire. The possibility of exiting problematic conditions is framed as potentiality only for precisely these liberal subject constellations that must be overcome, despite the fact of Portman's Jewish identity or her claim to fame as an indie darling within the cinematic industry.[8] Even though she is portrayed as non-conformist and idiosyncratic, such a casting decision of the potentially queer figure as one coherent with white heterosexual representation suggests that the engagement with past and contemporary colonial practice can be concluded without actually returning to—or being taken over by—Area X. While this is suggestive of an alternative reading that potentially contradicts the claims made above, the choices made within the production process must themselves be considered before the productive modes of the media form. As a large-scale production for cinema theatres, *Annihilation* the film is under pressure to perform quite differently than the first and potentially surprise success of an up to that point niche author. To be sure, even the film's ending, with the union of the two androids (performatively heterosexual only by accident in this reading), offers a glimpse of a potential confrontation and even "annihilation" of the world as we know it. Whether this could result in a more relational world, in which difference can be encountered "without separability" (Ferreira da Silva 2018), remains speculation or wishful thinking.

Thus, *Annihilation* can just as well be read as emblematic for the complete appropriation by a god-like instance, which sets itself absolute as a result of capital-centric orderings. As Erich Hörl (2019) has most recently discussed, even technocratic neoliberalism—seemingly centred on individuation—has already become environmentalitarian, in that power and ultimately capital no longer recognise and discipline subjects, but rather can shape and change behaviour and address even the most miniscule expression of difference to make it governable and optimise it to this form of governance. This distinction, as I explore elsewhere in more detail, is itself a simplification that posits the Western subject as absolute (Morais dos Santos Bruss 2022). Colonial history shows that power and subjugation have always been implemented not only by pure force, but also through influence, false promises, tilted objectivity, as well as small spaces of freedom within repressive mechanisms, so that modulation (as Deleuze describes it) has regulated behaviour and desire in the colonies long before its emergence in the West. However, the environmentalitarian situation Hörl describes is a continuous advancement of technologies, in which even supposedly free liberal subjects are also increasingly affected by seeping forms of control that have historically been applied to black, queer, and otherwise marginalised people. Thus, a dissolution of any representational subjectivities does not necessarily imply a liberation of the constraints of the same if algorithmic technologies simply gloss over the contradictions within categorical logics. Indeed, queer sociality has itself come under criticism for aligning with the interests of state capital, often against those materially oppressed, to become soothed into a governable identity (Puar 2007). Likewise, anti-colonial theories, such as Halberstam's concept of wildness, must not be divorced from the *realpolitik* and ongoing conditions of

a racialised techno-capitalism; after all, Halberstam also points out the ambivalence and violence of queer anti-subjectivity when referring to queer practices within mechanisms of colonial subjugation in Wild Things.

> the wild is the un/place where the people who are left outside of domesticity reside — small children, animals, and ruined adults, an anti community of wildness. We find survivors, humans who have lost all belief in the concept of humanity as something noble, empathetic, and uplifting and for whom concepts like order, civilisation, goodness, and right mean nothing and fail to provide the protection they imply.
>
> (Halberstam 2020, 137)

Indeed, the wild also holds a sense of loss and abjection. Queer environmentality, as imagined in *Annihilation*, may offer a proposal to defamiliarise the world as we know it and thus challenge the categorical and correlationist common sense of machine learning and pattern recognition. However, absolutising such a narrative as the only reading runs the risk of galloping over the "environmental metamorphosis of the capital form" (Hörl 2018, 239), which, as Hörl writes, draws its power primarily from shaping and modifying behaviour according to logics of capital.[9] The question of whether or not desubjectivation—expressed amongst other things in a loss of individual and conscious decision-making practices—can mean agency is at stake, as the recent past could show, for example, via the Cambridge Analytica case (Nosthoff and Maschewski 2017). The dissolution of subjectivity can thus also be understood as complete subjugation by technological environmentalisation: The biologist acts according to a script that is alien to her, which she can neither control nor question. *Annihilation* also holds the potential to contribute to the aestheticisation and mythification of AI created in the interests of capital as autonomous and supernatural.

Conclusion

It is precisely the ambivalence of its narrative that allows *Annihilation* to articulate a productive contradiction between the necessity of naming different positionalities in sociotechnical structures and a queer need to escape the reductive categories of modern scientific modalities of identification that animate technology. In doing so, the juxtaposition between the different modes of production of the novel and its film adaptation offers voids and counter-narratives that have been made productive here with regard to their significance for notions of and interrogations into AI. The immersion into hypernatural and, at the same time, technological systems question the necessity of a specifically coded subject and counter it with alienation with which historically marginalised bodies continue to be confronted. The perhaps terrifying-sounding experience of being possessed (by the Crawler entity) is mirrored in the historical demarcation of others (female, queer, and colonised bodies)

as abnormal, as strange, as experienceable only in weirdness ("queerness") and, as Gayatri Spivak once wrote, *Unheimlichkeit*, in relation to the self and to positioning in the world (Spivak 2003). That this *Unheimlichkeit* is racialised and gendered also means that the supposedly abnormal and uncanny bodies, which have always had less than fully human connotations, have a higher familiarity with a distributive sense of self, a foreignness, and thus tend to fare better in immersion than the liberal white subject. Nevertheless, such a narrative of ambiguity simultaneously offers a rearticulation of white heteronormative subjectivity and its proximity to a divine agency, a proximity that director Alex Garland repeatedly processes through technological superintelligences, as his other recent works also demonstrate. Although these productions, just like the adaptation of *Annihilation*, often draw marginalised characters in a deliberately ambivalent way, the engagements with the immersive technological systems, often portrayed as superior and omniscient, end up rearticulating simplified binaries between human and machine desire that stage the white-presenting protagonists as (albeit often fragile) heroines and representations of human exceptionalism. Especially with regards to the choice of Natalie Portman as the embodiment of the biologist, *Annihilation* (also) participates in an ongoing framing which generalises representations of whiteness and heterosexuality as agential subjects of progress; for only she manages to overcome reductive categorisations and exit explicit processes of identification as much as the problematic social order of the world outside Area X. This amounts to a whitewashing of desubjectification as well as of the history of queer bodies on which heteronormativity has been forcibly imposed. The proposed path of desubjectification thus simultaneously suggests a universalisation of the status quo of complete immersion in the infrastructures created by technocrats.

Yet, *Annihilation* rejects the myth of a perfect and singular consciousness as the result of human creation, and thus the notion that it would be readily possible to create an AGI that truly evokes a universal consciousness. Instead, the book and film devote themselves to an idea of AI as queer, artistic, and thus opaque and strangely monstrous and wild. Employing queer theory and decolonial thinking to this reading articulates that AI will thus not exhaust itself in accurate data or a general superintelligence, as intelligence needs bodies, situatedness, but also mutability and excess to become recognisable as such. However, a potential is articulated that arrives at new negotiations of desire along marginalised knowledge orders—in relation to technologies, rather than as defined by technologies. *Annihilation* makes clear that systems of new information technologies cannot be detached from categorisations of difference within which subjects and identities are interpellated and (re)produced in the process. Read as queer AI, the narrative articulates both the violence of expanding immersion through technological systems and the impossibility of pinning down (body) knowledge as immutable evidence.

Notes

1 As the editors elaborate in the introduction, raw data is never raw, but undergoes a number of selective processes that hinge upon value systems, before the data becomes actually tangible as knowledge.

2 As Londa Schiebinger (1993) convincingly argues, the history of the classification of humans as "mammals" by Carl von Linné (the very same person who also invented the taxonomies of human races) is bound up in a political genealogy which, while integrating humans into a history of natural development, marked reason as the (masculinely connoted) characteristic that distinguishes humans from the natural kingdom with the contemporaneously developed category of Homo Sapiens (as man of knowledge). This simultaneity is again de- and reconstructed via AI. On the one hand, AI is depicted as strongly masculine, rational, and removed from nature in the genealogy of the cybernetic brain metaphor (see, for example, Valerie Felix's contribution in this volume); on the other hand, artificial intelligence systems require raw materials and natural minerals based on the exploitation of nature and the environment understood as passive (Gabrys 2011), and the data economy is naturalised through metaphors such as "data is the new oil" (Couldry/Mejias 2019).

3 With Sylvia Wynter, I understand fictions as potent mechanisms of constructing reality that can, among other things, also influence material structures. They are thus not fictions in a classical sense, but participate in cultural mythmaking and channel affects and emotions; they are framings that make sense of the world, not in a merely metaphorical sense. Read through Wynter, the science narratives explored here are as much fiction as the fictional narrative presented in *Annihilation*, although their truth claims are of course pitched at different levels. Thus, the stories "we" tell are woven into principles that, with Wynter, are not only biogenetic but sociogenetic; they emerge in socialites (Wynter 2001, McKittrick 2021).

4 This does not mean that science is conflatable with fake news or conspiracy theories, nor does it mean that anything is science. With Sheila Jasanoff and Sang-Hyun Kim (2015), I rather understand these science/fictions as ideologically saturated and thus embedded within a set of values that is itself produced sociotechnical.

5 The term "New Weird," or sometimes "Slipstream," is used to describe a subcategory of science fiction literature that translates speculative elements from the fantasy genre into real-world models of society and scientific progress. The genre makes it possible to make the familiar "uncanny" and can thus break up or question normative narratives, especially with regard to technological developments (see e.g., Weinstock 2016).

6 The slogan originates from within "Queer Nation," a 1990s LGBTQ group based in New York that is largely responsible for the resignification of the term "queer." While the group's relevance for its 1990s HIV/AIDS activism, militant tactics, and deconstruction of an American national body is undoubtedly immense, these tactics have also been increasingly displaced by neoliberal identity politics. The critique of a construction of queer "nation," once conceived by Queer Nation in the insurrectionary sense of decolonisation (Berlant and Freeman 1992), refers instead to reductive representational politics that usually result in new normativity and—although they entail betterment for a few—often run the risk of appropriating a sense of authenticity which results in an exclusion of others.

7 In "A people's history of silicon valley," Keith Spencer (2018) paints a picture of a pluralistic population living without cultural hegemony and in harmony with nature. While certainly somewhat romanticised, the narrative of a society of equals, in which animals also came and went freely because they had nothing to fear from humans,

evokes the image of Area X as a symbiotic and non-anthropocentric nature culture (Haraway 2003).

8 Accordingly, Naomie Gramlich (2020) has pointed out that the cinematic adaptation of *Annihilation* can be read as an expression of colonial aphasia. Gramlich attests to the film's inability to speak on colonialism in any form that is actually relevant: *Annihilation* seems to perceive coloniality but not to be able to negotiate or articulate it.

9 For more detail on the environmentality of intelligence and capital, I refer to Orit Halpern's chapter in this volume.

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8 Innovation and iteration

Queer machines and the tension between manifesto and manifestor

Carsten Junker

A rhetoric of promises

Recent years have been marked by a high density of newly published manifestos that convey their authors' socio-political advocacy and cultural-critical engagement. Visibly located in polarised landscapes of "political crisis," manifestos can forcefully address pressing issues covering a broad spectrum of matters from the "nonhierarchical redistribution" of material resources to the "egalitarian recognition" of rights (Fraser 2019, 8, 30). As a form of activist writing, manifestos have a place in struggles for a more gender-egalitarian future.[1] Among recent manifestos written from feminist and queer perspectives, many also address technology and artificial intelligence (AI). Hileman et al.'s *cybertwee manifesto* (2014), Alexandra Pirici and Raluca Voinea's *Manifesto for the Gynecene: Sketch of a New Geological Era* (2015), Laboria Cuboniks's *Xenofeminist Manifesto: A Politics of Alienation* (2018), and Legacy Russell's *Glitch Feminism: A Manifesto* (2020). The list goes on. But these titles alone highlight a sequence of discursive interventions—manifestations—that can be linked back to earlier feminist manifestos, a central reference point being Donna Haraway's *Manifesto for Cyborgs* from 1985 (Haraway 1985). The significance of this pre-text cannot be overstated; Gender Studies scholar Breanne Fahs considers it "a text that not only forever altered the field of gender studies, but also paved the way for imagining humans and technology as politically intertwined" (2020, 391). An anthology edited by Fahs, catchily titled *Burn It Down! Feminist Manifestos for the Revolution* (2020), features a section of "Hacker/Cyborg" manifestos that opens with an excerpt from the 1991 version of Haraway's manifesto (Haraway 1991), thus placing Haraway's work at the beginning of a trajectory in which "we find a feminism wed to technology, wrestling with how we merge with, diverge from, and become technologies of resistance" (2020, 391). Fahs's anthology provides crucial keywords of a politically committed feminist rhetoric—"revolution" and "resistance"—that signal fundamental disruption. As is known, it is the disruption of an assumed distinction between nature and culture/technology in particular that cyberfeminist and other adjacent positions, in areas oftentimes termed feminist technoscience and critical

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posthumanism, anticipate and validate. Linking gender and technology in revolutionary gestures of manifesto writing, in short, has contributed to the discursive denaturalisation of presumedly naturally given orders. The manifestos listed above articulate a demand for this disruption in different ways; this is the agenda they share.

What requires more attention in discussions of the relationship between gender and technology, however, is the question of how these interventions are formalised. For agendas oriented toward transformative change, especially for queer and feminist ones, the manifesto seems an apt, if not *the* genre to express revolutionary demands. This accuracy of fit is grounded in the history of the form. Any manifesto written in more than the past one and a half centuries necessarily harks back, intentionally or not, to Karl Marx and Friedrich Engels's *Manifesto of the Communist Party* (1848)—the "urmanifesto of the modern age" (Danchev 2011, 1). It is safe to assume that any manifesto published since will be infused with the authoritative legacy of this predecessor text that, as is well known, has imprinted on its readers' minds its call for a revolutionary overthrow of a given status quo. Attaching the label of "manifesto" to a text will inescapably refer it back to the 1848 manifesto that calls for taking radical measures, and that make the action of taking them appear inevitable: "The Communists […] declare that their ends can be attained only by the forcible overthrow of all existing social conditions. Let the ruling classes tremble at a Communistic revolution" (Marx and Engels 1848, 34). The *Communist Manifesto* is a call to action; it exploits its revolutionary potential not only by performing a prescriptive (world-to-word) action but also a descriptive (word-to-world) one, as well as providing long passages of a critical analysis of what the authors frame as a given status quo. This combines into the disruptive rhetorical force of the *Communist Manifesto*, which infuses and invigorates any manifesto that follows in its footsteps, endowing it with the promise to sweep away unwanted, potentially violent power structures. As Janet Lyon, an eminent scholar of the manifesto as form, has noted: "to write a manifesto is to announce one's participation, however discursive, in a history of struggle against oppressive forces" (1999, 10). Sara Ahmed (2017, 252–253) has pointed out that manifestos critical of hegemony, as they expose and denounce structural relations of violence, at times have to resort to violent rhetoric themselves.

By formulating "the utopian dream of the hope for a monstrous world without gender" (Haraway 1985, 100), Haraway's manifesto, in contrast, uses a decidedly much less bellicose rhetoric than the one Marx and Engels used to frame their demands. Nonetheless, scholars have identified "points of continuity" between the two manifestos. What they share is "an eye to an as yet fictive future" (Weeks 2013, 217). Thus future-bound, one of the crucial achievements of Haraway's manifesto was to open up new prospects of the possibilities that technology might offer as a liberator from social constraints, and the recent feminist and queer manifestos follow the tracks

that Haraway's trailblazing text laid out, themselves identifying technological potentialities and promises for coming times.

The manifestos on which this chapter zooms in showcase these potentialities by contrasting technological innovation with a given status quo they critically frame as direful. Their authors, whom I call manifestors, use a rhetoric of promises held by the capacities of technology to challenge dominant relations of power. My interest lies in a contradiction that can be observed in the manifestors' use of the manifesto as form: while they make use of the form to posit newness and call for disruption—and update it in formally and propositionally divergent ways—the critical potential of the form itself is undermined through its increasingly frequent use in a clearly observable recent boom of the manifesto. In short: the repetitive mobilisation of the genre dilutes its effect. Its obvious commodification in a book market that revives it counters the explosive power of the manifestos. The iterative use of the form undermines the queer and feminist promises its authors formulate via the genre.[2]

Innovative forms and content

Cybertwee Manifesto

Formally playful, the *cybertwee manifesto* offers a creative take on the manifesto as form. Written by the arts collective cybertwee, which was co-founded by Gabriella Hileman, Violet Forest, and May Waver in 2014, the manifesto is anthologised in Fahs's edited volume of feminist manifestos (Hileman et al. 2020), but it is also accessible on the animated website *cybertwee.net*, the background of which changes colours on a spectrum from apricot to pink (Hileman et al. 2014). The manifesto is presented in three different forms on the website: (a) as a gif showing a white page of paper with 20 lines of pink text typed with a manual typewriter against the backdrop of silver foil and adorned with small scattered hearts in changing colours, (b) as text in purple lettering framed by three heart icons, and (c) as an embedded video showing the cybertwee collective sitting and lying down while reading the text out loud in a puppy-piling scenario reminiscent of a teenage sleepover party. Analog and digital technologies of communication merge to evoke a teen world of friendship-book affection. The colour-coding of this multimodal presentation corresponds to the propositional content of the manifesto: its praise of the "sweet and tender," the "romantic," "feminine," and "cute" as well as the strength of "sentimentality, empathy, and being too soft," is contrasted with an implicitly masculine "lack of emotion" and "the ability to be mechanical and efficient" (Hileman et al. 2014, 397). The manifesto praises "singularity" and identifies its manifestors as "solipsists," who inhabit a world of hearts, flowers, bees, and butterflies, a land saturated with nutritious nectar and sweet candy (397). This is exactly where digital technology enters the scene; candy and nectar become metaphorical vehicles for emojis and selfies, signs and instruments of social media technology that extend

selves into a vast virtual space from where they fold back into these mediated selves. The "body as the original prosthesis for operating in this universe" gets enhanced by means of digital communication to overcome "the limitations of corporeality," perhaps overcoming body-and-mind, nature-and-culture, as well as human-and-machine dichotomies (397). This is an agenda that playfully, lovingly affirms a digitised world and vanquishes any techno-pessimism with cuteness—one that may ultimately imply a levelling out of gendered and racialised power hierarchies and this way in effect reinstall a universalisable subject that, by default, has been conceived of as cis-gendered, straight, able-bodied, white, and male.

Manifesto for the Gynecene: Sketch of a New Geological Era

The *Manifesto for the Gynecene: Sketch of a New Geological Era* by Romanian-born artist Alexandra Pirici and curator Raluca Voinea gives the "feminine" as well as technology different meanings than the cybertwee collective. Also available on the internet (as well as exhibited in art exhibitions and published in different magazines and anthologies), Pirici and Voinea's manifesto sounds like an ecocritical intervention but has a much broader scope. Using the neologism of the "gynecene" as a counter-concept to the Anthropocene and its "brutal anthropocentrism," the authors "believe the Gynecene can be the gateway to a true pluralistic and expanded humanism, one which is compatible with machinic desires" (Pirici and Voinea 2015). While proposing to retain female-coded values of "kindness," "care," and "emancipatory exploration," Pirici and Voinea demand to move beyond a "women's world" and sketch a vision of a future that leaves behind gender-coded restrictions, overcoming divisions along the lines of demographically distinguishable groups and distinctions between earth, animal, human, and machine: "The feminine is the first stage towards a transgressive humanism" (Pirici and Voinea 2015). In this scenario of a new era, the techno-feminist dimensions of the authors' vision of an egalitarian world that is comfortable with technology and emancipated through its applications remain relatively abstract. They evoke promises attached to technological innovation and perhaps AI when they, in a nod to Haraway, embrace "the possibility, accepted and de-tabooed, of technological transformations of the human body towards hybrid forms such as the cyborg." In their broad call for "a radical change in politics and the world socioeconomic system," they frame technology as a "cultural asset" that, "together with the rest of culture, […] must be made public, open and free, put to the benefit of emancipating humanity while not destroying everything else around it."

Passages that talk of "trying to imagine a future ecology for the whole planetary assemblage" (Pirici and Voinea 2015) show that the authors are not shying away from presenting a grand, sweeping narrative of a future world. At first, this may seem like an expected genre convention of the manifesto. Yet what seems innovative about this manifesto is its authors'

uninhibited imagination of a future world that, paradoxically, harks back to notions of Enlightenment universalism. In this world, differences among isolated subjects, distinct groups, and political movements with their diverging agendas can be overcome, and disparate struggles find common ground. In this imagined expanded space, particularised groups and different species are imagined to unite in convivial coexistence: "In order to achieve a truly pluralistic society where possibilities can be enacted, we support the universalism of basic human rights as a common ground for a broader, inter-species and inter-objective politics of inclusion and true respect for difference" (Pirici and Voinea 2015). The authors end the manifesto with what they term a provisional conclusion, declaring that "the beauty of the world has to be enriched by a new beauty: the beauty of kindness." This is a kindness more inclusive than that of the cybertwee collective. Weary of antagonisms, Pirici and Voinea confidently envision an abstract togetherness as a condition for "creating a sense of unity across our seemingly incompatible histories." While some readers of the manifesto might consider this a naïve, if not problematic reinstalment of Eurocentric Enlightenment concepts that, from feminist, decolonial, and anti-racist perspectives, have been highlighted as partial and oppressive, others might consider it a refreshingly bold and urgently needed emancipatory techno-feminist reframing of the ideals of equality and freedom.

Xenofeminist Manifesto*: A Politics of Alienation*

In contrast to Pirici and Voinea, who embrace an idea of nature including social and technological dimensions—and reject a return to "some sort of natural state which basically never really existed" (Kunsthall Trondheim 2017, 27:28–27:34)—Laboria Cuboniks of *The Xenofeminist Manifesto* reject any gestures to nature entirely. In this way, the xenofeminist author collective strives to refute any problematic justifications of a social order that might be perceived as unchangeable: "To tilt the fulcrum [between norm and fact, between freedom and compulsion] in the direction of nature is a defensive concession at best, and a retreat from what makes trans and queer politics more than just a lobby: that it is an arduous assertion of freedom against an order that seemed immutable" (Laboria Cuboniks 2020, 45). The authors of *The Xenofeminist Manifesto*, which was also first published online in 2015, instead speak emphatically from a position in a contemporary "world that swarms with technological mediation, interlacing our daily lives with abstraction, virtuality, and complexity" (Laboria Cuboniks 2020, 13). Xenofeminism (from Greek *xenos* "stranger, foreigner") or XF, as abbreviated in the text, "seizes alienation as an impetus to generate new worlds" (15). The neologism of the manifesto's title, this linguistic venture into un-treaded waters, also underlines the author's vision of novel worlds. They frame alienation as a means of denaturalising and overcoming unjust social conditions, of questioning what had been legitimised as supposedly stable. As in the *Manifesto for the Gynecene*, the six

xenofeminist authors speak from and on behalf of diverse subject positions and groups: "the queer and trans among us, the differently-abled, as well as those who have suffered discrimination due to pregnancy or duties connected to child-rearing" (15). Like Pirici and Voinea's text, *The Xenofeminist Manifesto* brings a wide range of converging perspectives and positions into view, relating internally diverse groups and centring them as both addressees and agents of xenofeminism: "Technoscientific innovation must be linked to a collective theoretical and political thinking in which women, queers, and the gender non-conforming play an unparalleled role" (17). In this emancipatory, "gender-abolitionist" (55) project, rational science and technology are ascribed the potential to achieve the goal of "construct[ing] a society where traits currently assembled under the rubric of gender, no longer furnish a grid for the asymmetric operation of power" (55); "the ultimate task lies in engineering technologies to combat unequal access to reproductive and pharmacological tools, environmental cataclysm, economic instability, as well as dangerous forms of unpaid/underpaid labour" (19).

Like Pirici and Voinea, the xenofeminist collective embraces universalist claims, declaring a feminism "of unprecedented cunning, scale, and vision; a future in which the realization of gender justice and feminist emancipation contribute to a universalist politics assembled from the needs of every human, cutting across race, ability, economic standing, and geographical position" (13); these universal claims to an emancipatory politics of the social equally apply to the goals of technoscience: "Our lot is cast with technoscience, where nothing is so sacred that it cannot be reengineered and transformed so as to widen our aperture of freedom, extending to gender and the human" (65). Well aware of the potential objections to the universalist claims of their project, the manifestors anticipate and debunk a critique of their far-reaching politics by distancing themselves from "bloated, unmarked particulars—namely Eurocentric universalism—whereby the male is mistaken for the sexless, the white for raceless, the cis for the real, and so on" (57). Instead, they are calling for a "reworking of the universal [...] as intersectional" (57), for wielding the universal "so as to become a ready-to-hand tool for multiple political bodies" (59), for constructing a "coalition politics" (59). As the xenofeminist collective points out, partial perspectives and isolated struggles cannot adequately address all-encompassing, globalised power disparities linked to globalised technologies and all-pervasive capitalist economies. In lieu of "insufficient struggles, bound to fixed localities and fragmented insurrections" (29), the authors call for "[s]ystematic thinking and structural analysis" (29) to develop far-reaching strategies in the service of "calibrating the world otherwise" (41). The task they see, of deposing nothing less than the social injustices wrought by the grip of unbridled capitalism, involves a re-coding of masculine-gendered technology, urging "feminists to equip themselves with the skills to redeploy existing technologies and invent novel cognitive and material tools in the service of common ends" (33).

The called-for skills of "redeploying existing technologies" provides the cue for two sections of *The Xenofeminist Manifesto* ("0x0C" and "0x13," pp. 47, 75) that are particularly interesting in this context. Here, the authors affirm what might be considered queer potentialities of 1990s "'cyberspace'" (quotation marks in original), in contradistinction to a critical interrogation of current uses of social media platforms that restrict liberatory practices, in particularly of subject and group formation. Accordingly, the internet in the 1990s provided its users with a flexibility to experiment with and reject ascribed categories of social identification and positioning, offering "the promise of escaping the strictures of essentialist identity categories" (47), of "countering repressive gender regimes, generating solidarity among marginalised groups, and creating new spaces for experimentation" (75). While charges might be levelled against earlier uses of cyberspace for seeking escapist experimentation at the expense of a thorough critique of persistent structural inequalities, Laboria Cuboniks stresses that contemporary practices solidify existing demarcations of identities, claiming that the "climate of contemporary social media has swung forcefully in the other direction, and has become a theatre where these prostrations to identity are performed" (47). This is due, the manifestors claim, to the increased significance of visuality in online cultures: the "dominance of the visual in today's online interfaces has reinstated familiar modes of identity policing, power relations and gender norms in self-representation" (75). Despite the sobering diagnosis of this development, the authors remain optimistic about the potentialities that internet platforms afford; keywords are "connection, organisation, and skill sharing" (47). The task of "engineering platforms for social emancipation and organisation" (49) and "collective self-mastery requires a [...] deployment of semiotic operators over a terrain of highly networked cultural systems" (49). In the visual field, this primarily involves adjustments, recalibrations, and manipulations of "cultural and semiotic mutations" (49). One cannot help but wonder if the visual recording of the manifesto as an instrument of critical intervention, in the way that the *cybertwee manifesto* symbolically recalibrates the manifesto as a form of feminist articulation, would be an example of such a reengineering of semiotic operators. The penchant for formal innovation and imagination is evident in *The Xenofeminist Manifesto*, in both its printed and online versions.

While it may not come as a surprise that online platforms may yet hold promises of feminist appropriation for critical intervention and political mobilisation, what is inventive about *The Xenofeminist Manifesto* is the way it evokes the infrastructure of computer technology to provide a vocabulary with which to frame feminist theorising and activism. This is also where AI enters the picture, especially when open-source software is used in the service of AI. Like open-source software in the service of AI, so too can xenofeminism contribute to feminist emancipation, in the sense of responding and adapting to various urgent feminist demands. Note the following simile:

"Xenofeminism seeks to be a mutable architecture that, *like* open source software, remains available for perpetual modification and enhancement following the navigational impulse of militant ethical reasoning" (59, emphasis added). The potential of this tenet—and I venture to call it "queer" potential—lies in the integration of material and non-material facets, of juxtaposing infrastructural and discursive spheres. Thinking in tandem abstract workings of AI and the specific tasks of political action, including feminist theorising, seems innovative; it opens up new avenues to conceptualise queer-feminist activism. AI here provides a model instrument for how feminists can act. AI in this scenario enables a reconsideration of feminist practices. The xenofeminist version of feminism proposed here also reflects its own limitations; it departs from prior methods of feminist engagement and follows new protocols of activism. Taking up open-source software as a metaphor, AI technology itself is being inserted into the realm of feminist discourse and praxis. It gets conscripted into the politicised sphere of an emancipatory queer and feminist agenda: "XF seeks ways to seed an order that is equitable and just, injecting it into the geometry of freedoms these platforms afford" (59). Xenofeminism adapts AI to its ends. More broadly, xenofeminism ascribes technoscience the capacity to, again, "widen our aperture of freedom, extending to gender and the human" (65). Its claim that there is nothing "that cannot be studied scientifically and manipulated technologically" (65), is linked to "a proactive politics for biotechnical intervention" (81), including access to reproductive technologies through "grassroots telemedical abortion clinics" and pharmacological "free and open source medicine" for the "distribution of hormones" on "DIY-HRT [do-it-yourself hormone replacement therapy] forums" (81)—a reference to Paul B. Preciado's *Testo Junkie* here is obvious but not explicated (see Preciado 2013). Answers to how exactly the sharing of highly specialised medical knowledge can have actual bodily impact—how boundaries between digital and physical spheres can be overcome—remain open in light of "the embryonic promises held before us" (81).

Glitch Feminism: A Manifesto

The fourth manifesto, *Glitch Feminism: A Manifesto*, is based on the assumption that machinic errors, when machines fail to function, make aware of and blur boundaries between physical and digital worlds. It is the digital glitch here that serves as a metaphor for a critique that comes from perspectives of queer and feminist of colour theorising. As a sudden and generally temporary malfunction of machinery, the glitch (from Yiddish *gletshn* "to slide, glide, slip and German *glitschen* 'to slip,'" see 28–29) raises awareness of the space *between* the digital and the physical, becoming a lens through which to explore the potential of the failure to fit into a given gender system for non-normative forms of embodiment. Slippages matter; they expose oppressive hierarchies wrought by binary distinctions such as male/female, white/Black,

straight/gay, able-bodied/disabled, and cis/trans. Glitch feminism embraces the refusal to accept such distinctions: "Within glitch feminism, glitch is celebrated as a vehicle of refusal, a strategy of nonperformance. The glitch aims to make abstract again that which has been forced into an uncomfortable and ill-defined material: the body" (8). This is an agenda, then, of radical bodily de-materialisation, of highlighting, critiquing, and overcoming social effects on bodies culturally constructed along a binary code (not unlike that of the computational two-symbol coding system). How does Russell conceptualise the practice of such de-materialisation? "To dematerialize—to once more abstract—the body and transcend its limitations, we need to make room for other realities" (42). These are realities situated neither in an online world nor an offline world that Russell calls "[a]way from the keyboard ("AFK')" (5) but in a world that does not know an online-offline differentiation. The basic assumption is that, because "the machine is a material through which we process our bodily experiences" (67), there is no bodily existence beyond machines: "bodies navigating digital space are as much computational as they are flesh" (67). Locating such "glitched bodies" (85) in an in-between-online-offline sphere allows them to "resist normative programming" (85). They can invent. They refuse the binary of gender, and further, they refuse a reductionist understanding of bodies on grounds of gendering alone. The manifesto advocates for and speaks on behalf of people of colour and trans people, of "multiple and varied selves" (36). It particularises the universalised default position of white cyberfeminism, while at the same time universalising the position of complexly marked subjects and bodies. In line with Black feminist interventions into white feminisms since the mid-19th century, as well as with queer-of-colour interventions into intersectional Black feminism, glitch feminism "calls for the recognition of humanity and a future that celebrates bodies of colour, bodies that femme identify, bodies that embrace the in-between and beyond, all as an active resistance, a strategic blur of binary" (36). As such, the text is located at the intersection of yet another distinction, namely that between political activism and anti-categorical epistemology; and it would even be more adequate to say that glitch feminism seeks to overcome this distinction as well.

The claim to newness of glitch feminism, its disruptive stance, can be located in artistic acts of "generating ruptures between the *recognized* and the *recognizable* […], extending them to become fantastic landscapes of possibility" (28). This entails "recognizing oneself within digital material and the electric black mirror that carries it" (27). Glitched bodies can refuse conventionally intelligible subjectivities and forge new ones on a "sacred ground where our digital avatars and AFK selves can be suspended in an eternal kiss" (27). From this follows a promise: "Thus, we are empowered via the liberatory task of seizing the digital imaginary as an opportunity, a site to build on and the material to build with" (27). Elsewhere, the sound of the manifesto gets more forceful: "hacking the 'code' of gender [McKenzie Wark's *Hacker Manifesto* resonates here; see also *The Xenofeminist Manifesto* 81], making

binaries blurry, becomes our core objective, a revolutionary catalyst" (25). What is required is "mutiny in the form of strategic occupation" (25).

The in-betweenness that glitched bodies inhabit—elsewhere also conceptualised as the place of the data "buffer" (117)—becomes the ideal place to perform digital artistic practices, and these practices in turn become ideal places of slippage: "The passage of glitched bodies between the Internet underground and an AFK arena activates the production of new visual culture, a sort of bionic patois fluent to the digital native. Suspended between on- and offline, eternally traversing this loop, digital natives steeped in a reality shaped by the New Aesthetic remain devoid of a homeland" (45). This non-fixity holds potential to be exploited: "bodies in this era of visual culture have no single destination but rather take on a distributed nature, fluidly occupying many beings, many places, all at once" (46). Notably religious in terms of rhetoric, glitch feminism makes "an appeal toward the cosmic range wherein a personal and collective dispersion toward vastness becomes a consensual abstraction" (46). This spatial dispersion in the slippage between the physical and the digital has a temporal dimension of "becoming": "In becoming, we shapeshift, deepen, evolve, as we leave the edifice of a gendered architecture. Thus, our movement—our ability to ghost on the idea of the body, moving away from it—is a key component of becoming" (68). In this process, gender itself is understood metaphorically as "architecture" (68), or "algorithm," or "machine" (117). Leaving the impasse of gendered architecture, failing the gendered algorithm, and conceptualising glitch as a virus that fails the normative machine "presents us with a sharp vision of decay, of nonperformance that veers us toward a wild unknown. This is where we bloom" (117). This is an implicit reference to Jack Halberstam's work on queerness as wildness (see Halberstam 2020).

While the numerous artists and works with which Russell engages are not addressed here, artwork is the decisive reference of the manifesto. Russell's is as much an artistic and cultural-theoretical manifesto as it is a sociopolitical one, if such distinctions can and should at all be made. The *New York Times* featured it as one of the "Best Art Books of 2020," substantiating this choice the following way: "Grounded in theory (from [É]douard Glissant to Donna Haraway) but a fast, percussive read, her text is also a guide to the growing field of art practices—notably driven by Black and queer creators—that dissolve the boundary between 'internet art' and physical performance, activism and community-building" (Smith et al. 2020). As is the case with the *cybertwee manifesto* and *The Xenofeminist Manifesto*, the innovative content of *Glitch Feminism: A Manifesto* finds formal expression in a creative layout that disrupts and visually surpasses the text-based formalisations of other manifestos. The revolutionary rhetoric in which the liberatory promises are articulated in one way or another in these manifestos thus finds an equivalent in the visual expressions of "queer" technology. By juxtaposing written text with various stills of visual-artistic imagery that promises liberation from the oppressiveness of binary organisation, Russell's booklet in

particular visually enacts the deconstructive, queer claims of its conceptual innovations.

Critical claims

But what does the term queer even refer to, and to what extent does queer serve as a useful denominator to assess the critical potential of these manifestos? Going by the description of queer that Siobhan B. Somerville suggests, we can distinguish between two conceptualisations that point in different directions:

> In one use of the word, queer works as an umbrella term for a range of sexual and gender identities that are not "straight," or at least not normative. In a second sense, queer functions more as a verb than a noun, signaling a critical stance […] that is […] more interested in understanding the production of normativity and its queer companion, nonnormativity, than in delineating any particular population.
>
> (Somerville 2020, 2)

The *cybertwee manifesto* may be considered queer in the sense of Somerville's first delineation, as it evokes a feminised world of sweetness with which the manifestors who inhabit this world and the audiences to whom it presents a luring escape can identify. By inviting a gendered identification with the feminine cybertwee code, the manifesto can be considered homosocially feminine indeed, perhaps queer. However, by harking back on an implicit binary coding of masculine and feminine, the text produces its own normativity. Does its playful tone suggest a tongue-in-cheek, sceptical unmasking of the gendered normativity it itself evokes? This question itself remains to be answered by the readers of the text. Lisa Yaszek has recently highlighted the critical potential in the projects of the cybertwee cyberfeminist arts collective, particularly in their 2015 Dark Web Bake Sale, "which aimed to domesticate the dark web—a space notorious for both cybercrime and rampant racism and sexism—by providing volunteers with $15 of bitcoin and instructions on how to spend it on cupcakes the collective sold online" (Yaszek 2020, 39). The members of the artist collective thus "propose that women and other marginalised people might take back the Internet by using tactics that have been historically devalued as 'cute' or 'femme'" (Yaszek 2020, 39), and they embrace and celebrate what Laboria Cuboniks also refers to as "a feminism at ease with computation" (33). In comparable ways, Pirici and Voinea's manifesto sketches out an ideal non-normative queer future with their desire to shift toward a "feminine principle" in an effort "directed towards construction, care and emancipatory exploration rather than destruction."

The more explicitly critical, second sense of queer, which points to a scepticism toward "existing identity categories" (Somerville 2020, 2), resonates in the universalist rhetoric of both the *Manifesto for the Gynecene* and *The*

Xenofeminist Manifesto. Paradoxically, the authors seek to overcome what they consider parochial identity politics by suggesting that specific demographic groups ("women, queers, the poor and the disenfranchised") should jointly work toward the realisation of abstract ideals such as freedom and equality to "stand against and oppose an expansive and interconnected politics of exclusion, capitalist exploitation, religious fundamentalism, racism, sexism and brutal anthropocentrism" (Pirici and Voinea 2015). *The Xenofeminist Manifesto* directs its own universalist will to disruption at comparable antagonistic targets when its authors seek "to submerge the white-supremacist capitalist patriarchy in a sea of procedures that soften its shell and dismantle its defences, so as to build a new world from scraps" (91). In line with Somerville's reference to queer as the project of a critical "understanding [of] the production of normativity" (Somerville 2020, 2), xenofeminists unsurprisingly point to "the moribund figure of the nuclear family unit" (79) and the idea of unchangeable natural givens, but also (self)reflexively to leftist "political lassitude, […] factionalism and petty moralizing" (41) that would stifle the use of techno-affirmative strategies of queer and feminist self-empowerment.

In her call "to co-conspire in breaking the binary code" (Russell 2020, 159), Russell is most explicitly queer in a non-normative sense than the other manifestors. Russell detects this code in technology as well as socio-economic institutions (such as "patriarchy," "whiteness," and "neocolonialism") (20, 21). As she highlights, refusing to align with the code and "the canon of white cisgender heteronormativity […] pose[s] a threat to social order" (Russell 2020, 25). Glitch feminism is critically queer also in the sense that it seeks "to decolonize digital space" (33); it presents a project that highlights the racial default of a "white cyberfeminist landscape" (33), particularising white cyberfeminism and critically diversifying it.

A role of redoing

Texts that probe the queer potential of technology are part of a strikingly large number of manifestos published in recent years. These include, to name only a few: Cinzia Arruzza, Tithi Bhattacharya, and Nancy Fraser's *Feminism for the 99%: A Manifesto* (2019), Julia Lane's *Democratizing Our Data: A Manifesto* (2020), Cynthia Cruz's *The Melancholia of Class: A Manifesto for the Working Class* (2021), and Mathew Lawrence and Laurie Laybourn-Langton's *Planet on Fire: A Manifesto for the Age of Environmental Breakdown* (2021). Twelve years after the publication of McKenzie Wark's *Hacker Manifesto* (2004), Wark published yet another manifesto in 2016, the "RetroDada Manifesto." Taken together, these texts form a cluster of hegemony-critical, thematically diverse texts that manifest their authors' highly dynamic struggle for fundamental social change.[3] Even self-care books such as Lidia Yuknavitch's *Misfit's Manifesto* (2017) carry the label of "manifesto" in its title. What these publications have in common

is a gesture of urgency; they express urgent needs for transformation and formulate transformative demands. The genre label highlights this.

This manifesto boom also showcases that the use of the label points to an iterative practice, to repetitive acts that turn writers into manifestors who find their role by falling back on a reliable but ageing figure of intervention. Writing a text and calling it a manifesto self-assigns authors a role of re-doing. They claim speaking positions in the larger body of manifesto writing, and become recognisable as manifestors precisely because they are situated in the iterative, recurring practice of manifesto publishing. When the manifestors of the *cybertwee manifesto* write: "we curate our candy," this can also be extended to mean they curate their positions as manifestors. And why even become manifestors? The discursive position of the manifestor promises epistemic stability. This has to do with expectations that readers attach to the manifesto as form: we expect a manifestor to take a firm, non-negotiable stance and defend it vehemently and uncompromisingly. Further, the genre of manifesto is strongly bound to the trans-textual subject position of its author(s). In terms of the referential aesthetic with which it operates, the manifesto forms pre-structures and anticipates the assumption that those speaking *in* the text are linked to subjects who exist *outside* of the text and are invested in the claims they make with it. Referentiality is an authorising strategy of the genre.

In digital culture, the presentation of subjects is unreliable; subjects are denaturalised and deconstructed, unhinged from any grounding in "reality." The manifesto presents a welcome relief from any such deconstruction and responds to the invisibilisation of the subject by affording writers the opportunity to distinctly position themselves and by providing readers with a clearly identifiable human voice. Along the way, human-machine boundaries that got blurred are redrawn. In that sense, the manifesto is a compensatory genre: it constitutes stable manifesto-figures ranging from collaborative writing teams (the cybertwee collective; Pirici and Voinea) to singular author figures (Legacy Russell). And while Russell urges her readers to "work toward dissolving ourselves making the boundaries that delineate where we begin and end […] disappear completely" (2020, 68), she counters her own demand that the notion of an autonomous subject be overcome when she writes with reference to herself in singularly identifiable ways as the "author of this little book" (155). Even a more elusive author collective that carries a pseudonym such as Laboria Cuboniks can be traced to identifiable names and respective people: Amy Ireland, Diann Bauer, Helen Hester, Katrina Burch, Lucca Fraser, and Patricia Reed (Prokopenko 2020).

A logic of contradiction

From this emerges a genre-typical tension. While authors make use of the genre of manifesto to posit newness and claim disruption, the potential for innovation and the momentum of newness is undermined through the very

use of the form itself. Reasons for the current manifesto boom lie in the present historical moment; its splintered and divided sociopolitical and discursive arrangements seem to call for critical interventions signalled and announced by the conventions of the manifesto. Reasons may also well lie in the market logic to which publications are subjected; the affluent economy of manifesto publishing leads to and reveals an iterative generic performance. This reperformance of the form, in the sense of a reiterative claiming of the genre label, creates uniformity. In this respect, it is notable that both *The Xenofeminist Manifesto* and *Glitch Feminism: A Manifesto* are republished in book form with the same publisher (and there are at least eleven titles on the publisher's backlist that feature the label of "manifesto" on their cover). My point is this: promises of propositional and formal innovation get thwarted by the expectations the genre asks its authors and readers to fulfil repeatedly.

"I had made the decision actually to have it be called a manifesto as kind of a call to action, as a political and social framework," Russell notes in a discussion following a video presentation of her work at the School of Visual Arts in New York City (School of Visual Arts 2019, 32:24–32:33). Conceptualising the genre of manifesto as a *framework* provides a key to my argument: no matter how many different medial formalisations the *Glitch* manifesto and others undergo—Russell's was first published digitally in 2012, then on multiple media outlets as public video performance and released as a book—the genre of manifesto requires its users to draw boundaries, reperforming genre constraints in an iterative chain of acts of writing and speaking. And while authors of manifestos thus update these conventions and refashion them, they also immerse themselves in a long tradition of manifesto writing, solidifying themselves in their author position and congealing the genre. This contradictory logic of traditional innovation or innovative tradition can also be observed when Laboria Cuboniks use the manifesto as form to "propose XF as a platform. The very process of construction is therefore understood to be a negentropic, iterative, and continual refashioning" instead of a strict break from established aesthetic and political forms (2018, 59). This is a practice of iteration not only of xenofeminism but also of the manifesto. When the authors of *The Xenofeminist Manifesto* write that "XF urges constructive oscillation between description and prescription to mobilise the recursive potential of contemporary technologies upon gender, sexuality and disparities of power" (33), that oscillation between description and prescription is also at work in and through the manifesto. And this is a reminder, not least and once again, of Marx and Engels's *Manifesto of the Communist Party*. For both did not only propose a call to action. By combining prescriptive, analytical, *and* descriptive aspects in their text, they too oscillated between and performed multiple acts.

While the feminist and queer reperformances of that "ur-manifesto of the modern age" (Danchev 2011, 1) are certainly marked by thematic and formal variation, their practices, in effect, are repetitive, and innovative only to a limited

extent. Iteration can also exhaust the genre's disruptive potential. It can expose the critical demands of the feminist and queer manifestos to trivialisation. It seems ironic that the normalisation of the manifesto—understood here as an effect of its regeneration—parallels, or even catalyses the normalising processes that the term queer is oftentimes said to undergo. If manifestors wanted to prevent this, would they need to create completely new forms of envisioning futures and making political demands? For their programs to reach political momentum or fruition, would they be required to liberate their writings from the constraints and history of a form fraught with meaning? What is certain is this: a spectre is haunting queer and feminist manifestos of technology and AI—the spectre of old white men with a beard.

Notes

1 On the manifesto as a genre of feminist intervention, also see Paul (2022).
2 Given their contradictory dynamics of innovation and iteration, manifestos are also a subject of investigation in Contradiction Studies (Junker and Warnke, 2015; Lossau et al. 2019).
3 Reference should be made here to manifestos that do not represent a basic stance critical of hegemony and democracy; on this, see Seltzer (1998); Arntfield and Danesi (2017). On recent terrorist and white-coded nationalist manifestos, see for instance Gasser (2021); thanks to Anna von Rath for the reference to this contribution

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9 AI as medium and message

The (im)possibility of a queer response

Johannes Bruder

Introduction

In June 2022, (now former) Google engineer Blake Lemoine made headlines after publicly releasing transcripts of a chatbot based on a Large Language Model named *LaMDA* that he claimed is conscious, sentient, and a person. The news spread quickly and Google felt pressured to place him on paid administrative leave. The official reason was that Lemoine had breached his confidentiality clause when he contacted members of the government and demanded that *LaMDA* was represented by a lawyer and asked for its consent to be experimented with. The impending shitstorm on social media is likely to at least have influenced Google's decision to eventually fire Lemoine—although Google typically doesn't do a lot to prevent fantasies of machinic super intelligence. Blaise Agüera y Arcas, VP and fellow at Google Research, and Benjamin Bratton wrote a clever response to Lemoine's claims that, as so very often, will probably do nothing to contain, but actually fuel speculations about emerging forms of post-anthropocentric intelligence in algorithmic systems (Agüera y Arcas and Bratton 2022).

Fantasies of sentient artificial intelligence (AI) are not only driven by the design of chatbots such as the aforementioned *LaMDA* or Meta's recently minted *BlenderBot 3*, but also by modelling the intelligence of machine learning systems on cultural intelligence benchmarks such as chess, Go, or Donkey Kong, and by establishing discursive analogies between algorithmic pattern recognition and brain-based cognition in humans (Bruder 2019).[1] These experiments are not necessarily geared towards anthropomorphism—after all, corporate AI is typically considered to have *super*human capacities. In fact, intelligence is increasingly described in algorithmic terms and thus decoupled from human bodies.

Alex Garland's *Ex Machina* (2014) provides an interesting pop-cultural reference for post-anthropocentric notions of intelligence that are materialising at the intersection of different discourses. In the movie, Garland's human protagonists Nathan and Caleb perform a Turing test on an embodied AI named Ava. While her maker—the cliché of a Silicon Valley tech bro—and his employee-turned-housemate Caleb are trying to figure out

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whether Ava is *actually* intelligent, we're watching her pass the Turing test with ease. Ava flirts, cries, speculates, and confronts. She eventually convinces Caleb of her quasi-humanity since she can seemingly diverge from the trodden path of if-then decisions and logistical regression. Ava appears to be able to read Caleb's mind.

In a conversation with Nathan halfway into the movie, the ever-doubtful Caleb admits that he believes Ava to show signs of sentience and immediately contrasts her behaviour with that of autistic individuals.

CALEB: It got me thinking. In a way, the joke is the best indication of AI I've seen in her. It's discretely complicated. Kind of non-autistic.
NATHAN: What do you mean?
CALEB: It was a play on words, and a play on me. She could only do that with an awareness of her own mind, and also an awareness of mine.

What Caleb describes in this dialogue is typically referred to as "theory of mind": the ability to infer others' mental states—beliefs, intents, desires—and to use this knowledge to understand and predict their actions. Although autism research has advanced beyond theories of "mindblindness" (Baron-Cohen 1997), difficulties with theory of mind are still considered a core feature of autism spectrum disorder (ASD)—which is why Caleb refers to a possibly sentient Ava as "non-autistic." Ava is accordingly portrayed as what autistic people are supposedly not: empathetic, full of surprises, sentient, human-like or: able to pass as a human.

Ex Machina is just one example of how current discourses and technologies of AI perpetuate the cliched category of autistic individuals that are incapable of this form of social intelligence; and AI is just one example of elective affinities between media technology and ASD (Pinchevski and Peters 2016). To understand how media technologies developed under the moniker of AI are shaping autism, and how autism helps shape these media technologies, I therefore approach current AI as medium and message. Just as many other mental health issues, autism spectrum disorder is bound up with different media technologies, whether as narrative prosthesis that helps generate the norm (Mitchell and Snyder 2001), as assistive pretext that legitimates the development and helps shape general purpose technologies (Mills 2010), or simply as an object reconceived by diagnostic or taxonomic technologies (Keyes et al. 2021). The discourse around AI in this regard is currently focused on the implications of machine learning for disability, for algorithmic systems are marketed as capturing the essence of autism by identifying patterns in neuroscientific, genetic, or psychological data. AI mediates in that it reiterates notions of autism as a spectrum disorder and a specific form of subjectivity that involves predominantly communicational and social pathologies.

The role that autism or individuals diagnosed with ASD play in the in the larger infrastructure of AI has not received lots of attention. AI is a medium also for it defines the conditions of inclusion for individuals categorised as autistic. Running large-scale machine learning systems requires a diligent and dedicated workforce that individuals diagnosed with ASD appear to be particularly well suited for. As the *Ex Machina* example shows, autistic cognition is often figured as an anti-model of AI; at the same time, autistic individuals are increasingly recruited to work in Big Tech. In all these contexts, autism is transformed into a stable object that augments, and the fluidity and spectrality of autistic subjectivity—what M. Remi Yergeau calls "neuroqueerness"—is eliminated (Yergeau 2018).

AI's reliance on a specific autistic subject as anti-model and cognitive infrastructure also creates openings. If autistic cognition and AI are mutually constitutive, emphasising neuroqueerness—a tactical disidentification from both oppressive dominant and countercultural, autistic identities (Egner, 2019)—potentially deprives cognitive computing of its constitutive Other and therefore invalidates its default mode of operation. The central question of my contribution is thus how queerness can become "technological, operational, and systemic" (Barnett et al. 2016) in the context of machine learning. My analysis is inspired by a set of trans-feminist and queer knowledge-making processes that "draw attention to the multiple, old and new, genealogies which show that better information, from which we create better knowledges, better stories, make better decisions and take better actions, is not just processed but heavy-processed" (Cowan and Rault 2021). It aims at distilling the media theories that support current machine learning technologies—not to "reveal" but to create opportunities to mess with the default modes of contemporary AI.

AI as medium: Taxonomy

What happens when the identity-based and scientific uses of AI intersect? What happens when AI is deployed by scientists to "find" identity? These are two of the central questions posed by Os Keyes, Mwenza Blell, and Zoe Hitzig (2021) in an article published in *Interdisciplinary Science Reviews*. Collectively they ask what social worlds are produced, what ideas are reinforced, and what dangers result from the "scientific" use of AI. The authors compare algorithmic discrimination against autistic and homosexual individuals. Both forms of discrimination are connected mainly by the pathologisation of deviance through conversion therapies. Margaret Gibson and Patty Douglas (2018), for instance, show that Applied Behavioral Analysis (ABA), a re-education method developed by behavioralist Ivar Lovaas and applied to improve social skills among autistic children, is closely related to Gay Conversion Therapy. In both cases, certain people (non-autistic and gender-conforming) are generated as normal while others are subjected to coercive correction.

Keyes, Hitzig, and Blell argue that the power of machine learning here is neither a result of "AI" in the abstract, nor of "AI" as universal. Rather, it acts as a catalyst to pre-existing lines of research that categorises individuals as deviant and determine the nature of deviation. Anna Lauren Hoffmann (2021), among others, raises awareness for the fact that big data and machine learning reiterate older forms of institutional violence and introduce new forms of "data violence." AI—as we have come to know it through contemporary imaginaries and realities of AI—thus mediates forms of discrimination and violent inclusion: it fixes autistic identity and eliminates the fluidity and spectrality of identities and subject positions.

While the histories and presents of discrimination against autistic and homosexual individuals are entangled, the identity politics developed in response obviously diverge. The "neurodiversity" movement of autistic individuals has seized on signs of neurological difference to reframe autistic identity, representing it as a distinct subculture and way of being rather than a biological failure. This essentially emancipatory move, however, at times contributes to qualifying and quantifying neurobiological divergence as irreducible difference—a difference that can be leveraged to make demands, but also to discriminate against individuals that are placed "on the spectrum."[2] Our still paradigmatic understanding of autism has been actively produced through interactions between psychological research and experiments in computing throughout the second half of the 20th century. It developed around the mid-20th century, and after the closure of "mental deficiency" institutions in the late 1950s. Changes in the way that child development is observed, understood, and thought about have fueled reported increases in autism and turned the condition into an epidemiological entity (Hollins and Pilnick 2015). But beyond the numbers, which remain situated in rhetorics of crisis and doom, autism is frequently storied as an epic of a-sociality, non-intention, and incompleteness—a narrative that is (meanwhile) based on neurological difference (Yergeau 2018).

The dilemma is that recognition is inextricably entwined with identification (Evans 2017). In fact, the reality of autism would make for a case that breaks diagnostic categories and thus: the operation of classification that machine learning algorithms are typically designed for.

Sociologist Des Fitzgerald (2017), for instance, finds a definitional ambiguity at the heart of autism neuroscience: the feverish search for biomarkers is inextricably entwined with neuroscientists' collective unease with the multiplicity of autisms and the condition's unknowability. The affects generated by the experience of unknowability often fuel attempts to turn autism into a solid object. Autism researchers have therefore increasingly turned to machine learning techniques to grapple with data generated through the use of scientific methods and technologies, seeking to find genetic "origins" and neurological indicators of a mental condition that has always been hard to grasp. Machine learning systems are seen as capable of reducing the diagnostic uncertainty, thus solving, also, the heterogeneity of subjects considered autistic. Researchers

hope to winnow some consistent signal from the noise and find "global, complex and potentially multimodal patterns of abnormalities that cannot be efficiently identified with univariate methods" (Ecker et al. 2013, 439). The imperative to be classified to receive support provides legitimacy to these operations.

Big data's disparate impact in this regard is that machine learning and other algorithmic techniques can be right and wrong at the same time: they are right because they operate recursively on already existing prejudices based on erroneous data and correctly identify the deviant individual in the database (data bias). And yet, machine learning systems are dead wrong since these operations of pattern recognition perpetuate the violence inherent to the process of classification and identification (Barocas and Selbst 2016).

It is important to note that this sort of pattern recognition goes hand in hand with a process of pattern discrimination, which involves both the elimination of patterns that deviate from, water down or are incompatible with the category, and the discrimination against the categorised and captured (Apprich et al. 2018). This makes machine learning algorithms the latest evolution in a long line of similar mechanisms of administrative violence, which is particularly obvious where deviance is considered a given, and the scientific use of machine learning mainly revolves around qualifying differences and erasing everything that doesn't fit the bill. Whereas imaginaries of AI promise more accurate and just data science, machine learning algorithms are trained on identifying and reiterating definitions of deviance that psychiatry and genetics have institutionalised. Mediated by genetic or brain imaging data, the epistemologies and classificatory systems of psychiatry and mental health, as well as the operational logics of jurisprudence and welfare systems are reiterated by machines. What makes them "intelligent" is their capacity to find and legitimise the psychiatric category, to find identity and difference in data, again.

In this regard, the realities of machine learning and the imaginaries of future AI do not fall far short from the imaginary of intelligence defined by racist IQ tests in that they are first and foremost: discriminatory. Current AI is discriminatory in that it defines highly specific use cases that are sold as test beds for universal or general intelligence, and projects an imaginary of human-like intelligence that constructs autistic subjectivity as an absolute Other. At the same time, it employs or incorporates specific aspects of autistic cognition to realise its purportedly superhuman capacities. AI, therefore, is a case of violent inclusion that accepts autistic individuals only if they identify with being insufficient, incomplete, and assistive.

AI as medium: Labour

In her programmatic piece on the possibility of a "Queer OS," Kara Keeling describes "race, gender, class, citizenship, and ability (to name those among the most active in the United States today), to be mutually constitutive with

sexuality and with media and information technologies, thereby making it impossible to think any of them in isolation" (Keeling 2014, 153). The history of computing in the global North is indeed brimming with paternalistic framings of disability, which "obscured how much computing pioneers depended upon disabled persons as epistemic resources, as objects 'to think with'." Disability thus played an "implicit yet formative role in computing, precisely by informing the human-machine analogy" (Wu 2021, 69). What is perceived as cognitive impairment and disability by the mainstream is conceived as a prompt for the development of corrective mechanisms and then technologically generalised as a cognitive principle. This applies also to autism and the case of AI.

Autism is typically conceived as a social and communicational disorder, and associated with a-sociality, lack of empathy, non-intentionality, and rhetorical incapacity. Simon Baron-Cohn (1997), professor of developmental psychopathology and one of the simultaneously most famous and most disputed autism researchers circumscribed autism as "mindblindness," a category and diagnosis that characterises the condition as that which contrasts for it allegedly prevents the autistic subject from having access to its own algorithms of information processing. In her book *Authoring Autism*, autistic academic M. Remi Yergeau therefore writes that autistic subjects

> are not subjects in the agentive sense of the word, but are rather passively subject to the motions of brains and dermis gone awry.
>
> (Yergeau 2018, 7)

> Autism's rhetorical function – in genetics, neurology, psychology, philosophy, and more – is to contrast those who are otherwise presumed to be cognitively and thereby humanly whole.
>
> (ibid., 23)

The idea of autism as contrasting the default mode of human (social) cognition is entangled with a rather recent biomarker for autism that has been authenticated through the scientific use of AI: the so-called resting state activity of the brain (Bruder 2019). Resting state activity describes what happens in the brain when we or our bodies rest. It had long been ignored since researchers focused on activations of the brain in response to the environment; what happens in the brain when nothing happens on the outside was considered pure noise and consequently had to be discerned from cognitive activity. In the 1990s, however, neuroscientists discovered that some parts of the brain are in fact more active when we rest. Resting state activity was reconceived as a sort of default mode of cognition, which is indispensable for, amongst other things, empathy and the ability to understand your own beliefs, intents, desires, and emotions as well as those of others—capacities that individuals "on the spectrum" purportedly lack. As a result, autism is now linked to a malfunctioning of the so-called default (mode) network in the brain.

Said model of autistic subjectivity provides computing and AI with a model of cognition that it must be designed against. In the context of contemporary fantasies of AI, autistic cognition is a constitutive Other: a pathological form of human cognition that is to be avoided by means of algorithmic mechanisms and thus also acquires the status of a design brief. Researchers at Google's AI subsidiary DeepMind, for instance, consider the brain's default mode as an important touchstone for the design of machine learning algorithms (Bruder 2017).

In the context of AI, autistic cognition thus functions as a "narrative prosthesis": an opportunistic metaphorical device that shapes and augments the norm (Mitchell and Snyder 2001). Autism's prosthetic function in the context of contemporary AI imaginaries is rooted in experiments of North American behavioralists, such as BF Skinner, Ole Ivar Lovaas, Charles B. Ferster, and Marian K. DeMyer, who considered autistic individuals as research subjects—or objects—on their mission to justify the power and promise of behavioralism as a correctional technology. The promise of behavioralism in regard to autistic individuals was that their lack of humanness could be corrected, if not cured, through behavioural techniques. "Within Lovaas' published work," disability studies scholars Margaret Gibson and Patty Douglas write, "autistic behaviour was more routinely and less controversially associated with an undeveloped, primitive, pathological and non-relational humanity that was unaware of itself" (Gibson and Douglas 2018, 17). Autistic individuals—and thus very likely also the deviant, but neurologically "normal" individual—should learn to behave through the design of an environment that compensates for their purported lack of autonomy and sociality.[3]

The behavioralists' experiments inspired technologies designed to nudge the most non-responsive users into interacting with data-generating, computational environments. Jeff Nagy's yet unpublished research on Charles B. Ferster and Marian K. Myer's experiments with autistic children is highly instructive here. "Although their research preceded the introduction of computers into the psychological laboratory by about a decade," Nagy argues, "their mobilisation of autism in 'automatic' environments created new kinds of subjects that were well-adapted for computational capture."[4] In a recent paper, Nagy (2022) reads affective computing and current emotion AI through the lens of this history. Autism, he argues, was conceived as a "use case" in early affective computing movements and turned a conceptual model for facial emotion recognition systems, which were subsequently marketed as an emotional hearing aid for children diagnosed with Asperger's syndrome. In pursuit of advancing the agenda of behaviourism, autistic subjects therefore functioned as proxies for an anticipated, passive, or recalcitrant user; in the same go, emerging media ecologies were designed to accept specific, autistic subjects, namely those that behaved in accordance with the medical model of autism.[5]

In their article "Autism and new media: Disability between technology and society," media scholars Amit Pinchevski and John Durham Peters

therefore note a conceptual link between influential mental health dispositives and the new media's underlying ideology of successful communication and sociality. Social media and other network technologies explicitly include autistic individuals, but in doing so also define themselves as a condition of possibility for participation in social life and as a corrective to autistic cognition. "The Internet provides habitat free of the burdens of face-to-face encounters, high-tech industry fares well with the purported special abilities of those with Asperger's syndrome, and digital technology offers a rich metaphorical depository for the condition as a whole" (Pinchevski and Peters 2016, 2507).

This is also true of contemporary realities and fantasies of AI: the supposed cognitive incapacities of autistic individuals provide a blueprint for what AI is not supposed to be; at the same time, the corresponding cognitive abilities are quite in demand in Big Tech and AI research. Capturing and fixing individuals "on the spectrum" paradoxically allows for autistic individuals to be included in the operations of cognitive computing: as human computational infrastructure of machine learning operations. This is possible not despite, but because of purportedly fixed autistic subjectivities and specific cognitive (in)capabilities, which contrast imaginaries of artificial general intelligence but provide important services to corporate AI.

This paradox results from what Divya Siddarth, Daren Acemoglu, Danielle Allen, Kate Crawford, James Evans, Michael Jordan, and E. Glen Weyl describe as "actually envisioned AI" being bound up in "actually existing AI" (Siddarth et al. 2022). The purposes and practices that are part of the cutting-edge operations of the dominant technology companies investing heavily in AI include centralisation, autonomy, and the target of achieving general intelligence, "largely defined by comparison to, with the aim of surpassing, some conception of generalised, human-level cognitive capabilities" (ibid., 3). These conceptual and practical commitments are speculative futures that affect the present.

The authors critique the AI imaginaries courtesy of Big Tech as "driven by a wasteful imitation of human comparative advantages and a confused vision of autonomous intelligence" (ibid., 1). This vision is confused because autonomous intelligence, ironically, relies on "human time, work, and bodies [that] are threaded into, and surveilled by, data infrastructures, and re-shaped by its information flows" (Ganesh 2020, 1). Whereas humans are constantly reminded by Big Tech that they are (potentially) inferior to AI, human labour is indispensable for any kind of machine learning operation to begin with.

For autistic subjects, this paradox is taken to the extreme since autistic cognition, as the example from *Ex Machina* shows, is often used as an anti-model for AI: AI is defined in contrast to the autistic Other that is in this very process stripped of its claim to sentience. At the same time, the sociotechnical reality of "actually existing AI" thrives on including autistic individuals as human, computational infrastructure; they are factored in to assist our assistive

technologies wherever their purported cognitive (dis)abilities augment those of the machine. Cognitive capacities such as diligence, focus, and unbounded rationality, which conform with the idea of autists as a-social are foregrounded to incorporate individuals in the infrastructure of machine learning. An article in *Forbes* quotes Margareta Mucibabici of UiPath as follows:

> Individuals with autism have incredible attention to detail and discipline. They have shown to excel at working with technologies, like AI and automation, that depend on large volumes of data and repetitive tasks to streamline processes. Inevitably, process exceptions must be handled manually, and autistic people can use their unique attributes to learn processes and address any exceptions.
>
> (Palumbo 2022)

The condition is figured as a source of untapped talent that might help Big Tech to become more efficient, which is why "social enterprises" like *Specialisterne* and *Daivergent* have specialised in providing services such as software testing, quality control, or data labelling to business partners; they are also partnering with companies like *Microsoft* and *SAP* to recruit people with ASD and to enable tech companies to fulfil their pledge to hire more neurodiverse people.

Os Keyes (2020) describes this selective inclusion of autistic subjects in big tech as a form of "automating autism": the perceived cognitive (dis)abilities are put to work in the planetary-scale infrastructures of AI. This is possible also since autistic individuals are considered to excel where communication with other humans is reduced to a minimum and labour is organised by the machine. As the examples of *Daivergent* and *Specialisterne* demonstrate, apparent characteristics of autistic cognition become no less than an asset and probably even an operating principle in the infrastructure of real-world AI. At the same time, a meaningful life for individuals on the spectrum as conceived by big tech is linked to abiding by the characteristics of autism defined in the medical model and behaviourist experiments of the mid-20th century. In other words, autistic individuals are productive if they adopt the subjectivities iterated by machine learning systems and simultaneously provide these very systems with specific cognitive capacities that can be productively implemented in their computational infrastructure. This happens not despite, but *because* they are allegedly not capable of the empathetic, social intelligence that AI attempts to reproduce, and instead purportedly exhibit machine-like or algorithmic behaviours that profit the system.

I believe it is worthwhile to dwell on this reality of selective inclusion and exclusion of autistic cognition for it shows how pathology and incompleteness are mobilised towards the ends or, media theories of Big Tech. In her recent work, Sarah Sharma Sharma re-reads McLuhan's "Understanding Media. Extensions of Man" as an inspiration for how big tech imagines the

work that media (should) do in civilised societies. "To me, Kittler, McLuhan, and others […] betray a conception of the technological where all our media are not just extensions of man, they're extensions of man's idea of what servitude and utility look like" (Bruder et al. 2022). The media theory of McLuhan appears to persist in AI imaginaries—it provides context to the definition of optimal behaviours for actually envisioned AI and suggests adequate roles for specific humans in existing infrastructures of machine learning.

The link between autism and AI therefore makes for a case where pathology not only reveals normality, but it also reveals technology (Pinchevski and Peters 2016). The real "message" of contemporary AI as a medium is that it perpetuates a model of productive cognition in which everything—and I mean everything—turns into computational infrastructure. Whether it's the land on which a data centre sits, or the water used to cool its servers; whether it's a coder at Microsoft or a user of Apple smartphones—while Big Tech resorts to long-termism and promises that AI will ultimately be of service to all of humanity, actually existing AI profits some and turns many into ideally mute utilities.

Sarah Sharma's response to Big Tech's fantasies of utility and servitude is a feminism for the broken machine, which accounts for the differential experience of "being understood as a technology that does not work properly" (Sharma 2020, 172). Broken machines, she writes further, "do not operate under the logic of binary gender code" (ibid.); that is, they self-consciously adopt the identity of the broken machine to disidentify with the gender identities that new technologies and media hold dear.

AI as message and the attempt to refrain from responding

The function of autism and autistic individuals in the context of contemporary corporate AI provides insights into the media theories courtesy of Big Tech and the inherent fantasies of servitude and utility. While autistic cognition provides AI with an anti-model, attempts at including autistic individuals in machine learning's computational infrastructure emphasise how much Big Tech values aspects of autistic subjectivity such as diligence, unbounded rationality, and undivided attention to repetitive tasks and processes. Everything that deviates from this norm is subject to being eliminated through training—whether it is the training of future tech workers through companies like *Daivergent* or *Specialisterne* or the training of machine learning models to capture the true nature of autism.

Pattern discrimination in and through AI is a result of the "realpolitik" of AI (Robles-Anderson 2021)—a tautology and reality that keeps insisting. Machine learning systems are optimised to perform the operations of capture—while the idea of being "on the spectrum" suggests a continuum, it effectively cements difference to the norm. These realities of actually existing

AI casts shadows of doubt over (corporate) AI ethics, which typically translates resistance to the harms that algorithmic systems iterate into sets of design activities that engage with discrimination through the notion of data and model bias. "So, even when technical fixes are designed to mitigate harms, they fall short because the socio-technical aspects of how violence happens are not fully addressed by the re-design alone" (Ganesh and Moss 2022). Even if machine learning systems would become fairer, the desire to categorise and capture, and the will to include individuals that perform autistic cognition and subjectivity according to the standards of the medical model uphold the category. The principles of data science and machine learning are therefore incompatible with queerness, Os Keyes writes in *Real Life Mag* (Keyes 2019): "Quite the opposite: They sound like a framework that fundamentally results in the *elimination* of queerness – the destruction of autonomy, contextuality, and fluidity, all of which make us what we are and are often necessary to keep us safe."

Yet, the media theory that contemporary AI manifests might also provide speculative openings. As Big Tech tries to model its brand of post-anthropological intelligence after coarse principles of human brain function, it increasingly conceives of human contributors as mere neurons. Individuals that perform autistic cognition and subjectivity as defined in the medical model are figured as an ideal workforce and a role model for this idea of the human infrastructure of AI. Against this backdrop, neuroqueerness might provide a blueprint for queerness more generally to become "technological, operative, and systemic" (Barnett et al. 2016). It first and foremost represents a disidentification with the autistic identity that mental health and computing have generated, and a recovery of difference between the individuals that are iteratively homogenised and fixed on the spectrum. "Neuroqueer requires those who engage in it to disidentify from both oppressive dominant and counterculture identities that perpetuate destructive medical model discourses of cure. It is a queer/crip response to discussions about gender, sexuality, and disability as pathology that works to deconstruct normative identity categories" (Egner 2019, 123).

Autistic activist M. Remi Yergeau's version of neurological queerness, for instance, opposes and rejects the ableist privileging of intentionality and diplomacy in rhetorical traditions—capabilities that are typically denied to autistic individuals—by foregrounding the rhetorical abilities of autistics. This move allows for reconceptualising rhetoricity tout court, and in contrast to rhetorical traditions that rest on and perpetuate notions of incompleteness and insufficiency. In *Authoring Autism*, Yergeau writes that the brains of autistic individuals "are neuroqueer brains whose synapses routinely fire blanks, and something as banal as our pronoun (mis)use supposedly evidences our distinctiveness from all other persons" (Yergeau 2018, 23). That is, the divergent behaviour of synapses and neurons results in different rhetorics, in a different behaviour of the individual, in a different behaviour of the system as a whole. If the politics of inclusion applied to autistic individuals derive from a media theory that

turns everything and all of us into a utility of AI, there is something to gain from identifying with being computational, with being mechanical, with being broken. There isn't much to gain from providing another humanistic response to the operations of Big Tech. To disqualify AI as deficient with reference to a specifically human intelligence doesn't help—after all, this primarily sets incentives to continue the resource and energy-intensive search for new forms of tech-fueled, post-anthropocentric intelligence. What's at stake here is a different understanding of intelligence that is neither linked to racist IQ tests, nor to wasteful imitations of human comparative qualities. This new understanding of intelligence would be as queer, as it would be social: neurons that wire together, fire together—and they fire blanks.

Notes

1 The Centre on Privacy & Technology at Georgetown Law has therefore committed itself to no longer using the terms "artificial intelligence," "AI," and "machine learning" (Tucker 2022). I am nevertheless referring to artificial intelligence and machine learning here because the text is about precisely these borrowings and the relationship to the definition of human intelligence.
2 The term "on the spectrum" refers to the official diagnosis of autism spectrum disorder (as included in the Diagnostic and Statistical Manual of Mental Disorders (DSM)), which includes symptoms such as "persistent deficits in social communication and social interaction" and "restricted, repetitive patterns of behaviour, interests, or activities." It is in the process of becoming a catch-all term for socially inept behaviour and is thus often used with negative connotations.
3 These ideas persist e.g., in systemic approaches to empathy courtesy of affective computing, which target "inventing personal technologies for improving awareness of affective states and its selective communication to others" (El Kaliouby et al. 2006, 229).
4 Jeff Nagy. "Care in the "Automatic Environment": Autism and Data Behaviorism at Mid-Century." Unpublished manuscript of a presentation at the SIGCIS Conference 2021, September 23–25.
5 The notion of the medical model of autism derives from Mitzi Waltz's text "Autism = death." She writes: "Although the distortions inherent in current discourses of autism are often not innately malicious – most are simply expressions of incomplete knowledge – one function of these distortions is the exercise of power. They convey the power to include or exclude, to ignore or treat, and even to control or harm, first by positioning autism as a medical condition in need of a cure and, second by rendering its 'sufferers' less than fully human" (Waltz 2008, 14).

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Conclusion

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10 Inconclusion

Absent presences

Os Keyes

What AI does to queerness (and what queerness does to AI)

Queer lives, practices, and theories have always had an (at best) troubled relationship with technologies of instrumentalisation. Nowhere is this made more clear, in the here-and-now, than with respect to Artificial Intelligence (AI), which is premised entirely on formal classification and differential outcomes stemming from that classification (Chun 2021).

A range of scholars have argued that AI is, correspondingly, fundamentally incompatible with queerness (Keyes 2019; Schram 2019). AI is about description and prediction; it works to thwart the incommensurate and the unpredictable. In many respects this has been true since the 1970s, with many feminist critiques of the singular model of personhood involved in AI (Adam 2006) retrospectively identifiable as queer in their demand for unpredictable pluralism. The consequences of normative AI's simultaneous increasing power, and failure to adequately take up these critiques, have been tremendous and almost uniformly negative. We have seen algorithmic systems of securitisation built around monolithic and rigid notions of gender, with correspondingly negative consequences for trans and gender non-conforming people (Keyes 2018); we have seen fixed ideas of "digital epidermlization" (Browne 2015), as Katrin Köppert points to in her chapter, and an overlapping exclusion of the "flesh" (Morrison 2019). We have seen the same epistemology of extraction, control, and prediction play out in the methods used by researchers behind these projects, with violence appearing in the making, let alone the using (Gray and Suri 2019; Keyes and Austin 2022). This is unsurprising given that, as Nishant Shah (this volume) demonstrates, a necessary precondition of the perceived purity of AI is too dirty and dismiss queer existences. Shifting this, and the cascade of violence it produces, will require more than better datasets or algorithms.

Of course, things are more complex than that—they always are. People have always used appropriate technologies for contrary purposes, and turned them back on their designers; the same is true of systems of order and classification (Law 1993; Feenberg 1991). Within the territory that AI demarcates, there is always further space to move. From Rodrigo Ochigame and Kye Ye's (2021)

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work on pluralistic and perspectival search systems to Brian Schram's (2019) proposals for queer disruptions of datafication, we can see researchers and activists dancing through those gaps and exceptions. Just as online communications simultaneously provide space for queer life and queerphobia (see Scheuerman et al, 2018), AI, it seems, has more going on than control and classification alone, as reflected by Sara Morais dos Santos Bruss's (this volume) reworking of AI's mythos to enable queer imagination.

To the credit of the various authors in this book, the complexity and ambiguity of AI is confronted head-on—how delightfully queer! Klipphahn-Karge's analysis of the queer potential of robotics argues for neither the subject artwork's pure normativity nor anti-normativity, instead pointing to the "potential […] [to] describe the openness and ambivalence of queer bodies." Ute Kalender muses on the fundamentally ambiguous relationship between crip lives and the "smart cyborg," pointing to the tension between the abstract, utopian idea of cyborgification as a means of escape, and the practical pain and normalising forces involved in undertaking it in practice. Johannes Bruder's chapter argues for the "(im)possibility of a queer response" through investigating the links between AI and M. Remy Yergeau's notion of neuroqueerness (2018), with respect to autistic people. In doing so, he not only adds nuance and complexity to analyses of AI, but adds (welcome) nuance and complexity to some of my own analyses of the relationship between autism and AI (see Keyes 2020).

In doing so, the authors address one of the most common critiques of queer theory: the "normative anti-normativity" in which political potential is to be found only in the fundamentally unconventional, and queer scholarship must be "Against! Against! Only and always against!" (Povinelli 2015, 169; see also Jagose 2015; Wiegman and Wilson 2015). But what more is there to be done—in queering AI, and in queering queer theory itself? Where do we go from here, with these critiques and analyses? Two important directions for me—directions that are interlinked—are scholars' choices of *objects* and choices of *actions*.

Object choices

To heavily paraphrase Charles Mills (2005), political activism is already navigating the tensions between queerness and normativity; this is not a question, necessarily, of something *new*. We can see this in Dean Spade's (2011) idea of "law as tactics"; in the history of HIV/AIDS activism (Epstein 1996); in challenges to the biopolitics of prison food (Hatch 2019). And we can see this in already-existing activism around and with AI. The European campaigning against emotion recognition technology—the campaigns of activists in Brownsville, in New York City, against the datafication and securitisation of public housing.

But, here are some of the objects of this volume's interventions. Jeff VanderMeer's book *Annihilation* (Morais dos Santos Bruss); Jordan Wolfson's

artwork *(Female Figure)* (Klipphahn-Karge); the concept of the manifesto (Junker); a "GIF essay" (Köppert). By and large, these analyses and interpretations are oriented towards the cultural, and away from more visceral, collective activism. This is not to dismiss them (culture matters, and the interventions that have been made here are insightful and flourishing). And it is also not to say that there are no *reasons* for culture as the site of queer analysis. Historically, the trajectory of queer theory (particularly Foucaultian queer theory) has been through the disciplines and methods of the humanities (Koopman 2009), and while there are now efforts to resurrect the possibility of queerness for the social sciences (and vice versa; see Love 2021 and Compton et al. 2018), it has to be admitted that there is far more of a history, a pattern and a habit of cultural analysis around queer theory than of more sociologically inflected inquiry into the practices of social movements. Perhaps, as David Halperin (2003) notes, queer theory itself has become uncomfortably normalised, and normative, in the methods and domains we are comfortable with.

What, as Kenneth Burke would put it, "trained incapacities" (Burke 1984, 18) result from this focus on cultural artefacts? How is queer theory and interpretation correspondingly constrained? And could it be otherwise? My answer to the last one, at least, is "yes," and that it behoves us to explore what that otherwise might look like—to look for queerness not only in cultural artefacts, but in the imaginaries and activisms underlying social movements around technology. These, just as the arts, are sites of contestation, futuring and skewing; of tensions that challenge normativity and "normative anti-normativity" to boot. What would happen if queer theorists examined social, as well as artistic, movements?

This is not to suggest that queer theorists and cultural studies scholars parachute themselves into social movements with the intent of extracting knowledge. To do so would be to repeat one of the classic harms and modes of violence of the academy; the one-directional model of abstracted examination of campaigns against injustice, and as a result, the feeling (quite well-grounded) that "your theory is written in our blood" (Namaste 2009, 27). Instead, we might look to engaging in a more participatory fashion than is the norm in cultural critique. Two particular sources of inspiration for me, here, are Sucheta Ghoshal's work with the Southern Movement Assembly (SMA) in the United States (Ghoshal 2020), and the work of Richa Nagar and the Sangtin Kisan Mazdoor Sangathan collective in India.

Ghoshal's work with the SMA—a longstanding network of geographically distributed community organisations focusing on Black liberation in the United States—was centred on how to coordinate movement activists with differential access to technology, and do so in a way without compromising radical imaginaries. In (geographic) contrast, Nagar and Sangtin Kisan Mazdoor Sangathan focused on Dalit activism, particularly that of Dalit women, through direct confrontation, collaboration, and art creation.

While I don't know if Sucheta Ghoshal or the Sangtin Kisan Mazdoor Sangathan collective would describe their work as "queer," I see a queer

thread in their navigation of activist tensions and imagination of something different—imaginations and activisms that joyously embrace both the grounded work of campaigns and campaigners, and the possibility for these campaigns to be sites of futuring and skewing, just as the arts are. Nagar, in particular, framed her work as motivated by "post-oppositionality," which she defines as a framework that:

> invites us to think differently, to step beyond our conventional rules, to liberate ourselves from the oppositionally based theories and practices we generally employ. Although post-oppositionality can take many forms, these forms share several characteristics, including the belief in people's interconnectedness with all that exists; the acceptance of paradox and contradiction; the desire to be radically inclusive—to seek and create complex commonalities and broad-based alliances for social change; and intellectual humility—the recognition that our knowledge is always partial, incomplete, and thus open to revision.
>
> (Nagar and Sangtin Kisan Mazdoor Sangathan, year, xi–xii)

Incompleteness, contingency, paradox, and contradiction; what could be a queerer lens than that?

Vitally, neither Ghoshal (nor Nagar's) engagement was monodirectional. Instead, they asked what they could give to the movements, as well as what the movements could give to them; they offered what Nagar frames as "radical vulnerability" (Nagar and Shirazi 2019), with the expectation that change and benefit should flow *both* ways. Looking toward social movements in such a fashion would simultaneously provide support to the movements seeking change right now, and provide, perhaps necessary, correctives to queer theory itself. By taking theorists away from interpretation in isolation, and towards material, visceral, collective activism, we would be forced to confront (to paraphrase Kathryn Pyne Addelson (2009)'s thoughts on ethical theory) the fact that queerness is already being practised and navigated in a range of sites. Those sites, and the people within them, are likely to prove far better sources of insight than theorising between ourselves.

Action choices

This shift towards already-existing movements, as well as cultural forms, neatly segues to the other change queer involvement in AI might engage in—a change from describing and critiquing to *doing*: to designing; to building. In some respects, this is an uncomfortable proposal, for reasons of both complicity and capacity. *Complicity* because there is, I think, a sense (perhaps stemming from our normative anti-normativity) that to be engaged in a material way is to give up the ambiguous play of ethical and consequential uncertainty and instead come down on the side of our objects. The side where all of our theoretical training teaches us, complicity and harm are guaranteed.

It hardly seems like a mistake that one of the queerest proposals for doing, "QueerOS" (Barnett et al. 2016), is (quite purposefully) impossible to build. This impossibility is certainly desirable, in queer theory; the impossible has a good claim to being the "purest" form of imagination, and non-normativity, which is certainly part of the authors' point. But it also serves to excuse researchers from doing, and thus becoming complicit in the (inevitable) contingency of what is done. *Capacity,* because the number of queer theorists who can code (or: programmers with a deep engagement with queer theory), is small; Winnie Soon (2020) is one of the few exceptions. The skills involved in doing both rarely come together, and for those of us most comfortable in the realm of interpretation, a shift towards doing can feel alienating. Much like the "turn toward materiality" (Mulvin 2021, 192), it seems to be a shift away from practices of cultural interpretation, understanding, and critique; a shift towards things we are not so confident, necessarily, in our ability to execute. But of course, complicity is *always* guaranteed; we are complicit in myriad things simply by existing, much less existing in the university (Moten and Harney 2004). And while doing can be discomfiting, what kind of queer theorist turns away from the uncomfortable? Confronting the uncomfortable and unclear is entirely the point!

Still: this is not to say that the shift does not change the nature (and orientation) of our critique (Jaeggi 2018), nor that the entirely alien and unknown is an ideal place to start. There must be some commensurability, some framework to link the unknown to the known, for anything to be possible. One framework—one we *could* use—comes from Human-Computer Interaction, specifically in the late 1990s and early 2000s. From, really, one of the "white men with a beard" who Junker (this volume) notes as haunting AI: Phil Agre (who, in his defence, does not have a beard).

Agre was (is) an odd fish—perhaps the oddest of fishes. Trained in computer science at MIT, his dissertation and doctoral work focused on phenomenological approaches to designing machine learning systems. But after graduation, he found himself in California, where he worked and collaborated with Hubert Dreyfuss, Howie Becker, Susan Leigh Star, and a range of other philosophically inflected sociologists (and sociologically inflected philosophers). The result was a catalysis of his already-determined desire to weave the humanities and computing together; to have each learn from each other, particularly with respect to AI. His first (and only) book, *Computation and Human Experience* (Agre 1997a), might be the only thing I've read where the index proceeds "Merleau-Ponty, Maurice; Minsky, Marvin."

In reflecting on his successes and failures—his "lessons learned from trying to reform AI" (1997b), Agre perceived that the greatest difficulty in this project was the lack of commensurability between the (computing-oriented) AI researchers, and more philosophically and critically minded theorists and analysts from the humanities. Put simply, they were neither speaking the same language, nor comfortable learning that of the other.

What he advocated for as a (partial) resolution was the development of a "critical technical practice," and of critical technical practitioners—those with "one foot planted in the craft work of design and the other foot planted in the reflexive work of critique" (Agre 1997b).

What might that look like for queer theorists? We have many proposals for purposefully queer technologies in this space—technologies designed to disrupt practices of control, and dichotomous ideas of reality. We are hardly lacking in ideas, or in colleagues. There is Brian Schram, and his proposal for "flooding [the] archive with a million iterations of oneself that stake their claim to a wounded life inside the surveillant assemblage" (Schram 2019, 615). There is the "trans time" project (Haimson 2020), which simultaneously created space for a panoply of trans lives without datafication and worked to counter transnormative temporal flows of transition—a project that shut down precisely because of *an absence of willing and capable partners to maintain it*, demonstrating neatly both the potential for doing to be queer, and the need for many hands in making it so. In my own day-to-day, I have debated, discussed, and joked about the idea of a spinoff of the popular "scikit-learn" machine learning package, "suicikit-learn," that would purposefully obliterate models and datasets after a certain number of uses in order to force developers into closer relations with the flesh and blood and data doppelgangers they depend on. And these are just off the top of my head; what ideas do you, the reader, have? What ideas do other contributors have? How might we go beyond looking, and towards doing? Just as pressingly: how might we ask these questions with and within broader social and activist movements, rather than in books and artworks alone?

The shift to doing will certainly not be comfortable—straddling boundaries never is. But (a la Srinivasan, 2016)—if analysis could build a queer utopia alone, we would not still be here.

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